INTERNATIONAL DECADE FOR NATURAL DISASTER REDUCTION

Some 18 million people in southern Africa may starve to death this year as a result of drought. This, and the havoc wreaked by an increasing number of other natural disasters around the world, makes international efforts for natural disaster reduction all the more urgent.

Since 1990 alone, there have been volcanic eruptions in Japan, the Philippines and Nicaragua; earthquakes in Iran, Guatemala, Costa Rica and Turkey; devastating floods in China; a cyclone in Bangladesh; and tidal waves in Nicaragua. The United States has recently undergone the costliest natural disaster in its history, Hurricane Andrew. And such events are on the rise.

Deaths associated with disasters have increased 50 per cent each decade since the 1950s, according to the World Bank, with 3 million deaths over the past two decades and 162,000 in 1991 alone. The related losses in financial terms have increased about three times from the 1960s to the 1980s; global losses just for 1990 were estimated at $47 billion.

But the losses, both human and economic, fall disproportionately on the world's poorer countries: Between 1970 and 1985, developed countries suffered only 3 per cent of the world's major disasters, but death rates in the less developed nations were about 100 times greater.

To combat the ominous effects of disasters ranging from sudden geophysical phenomena (volcanoes, earthquakes, floods, cyclones) to less sudden natural catastrophes (drought) and manmade disasters (civil strife, massive population movements and chemical/nuclear accidents), over the years the United Nations system has mobilized several of its agencies to acquire and apply the necessary scientific and technical knowledge and to assist countries in disaster preparedness and mitigation activities. In 1987, the United Nations designated the 1990s the International Decade for Natural Disaster Reduction (IDNDR). Launched on 1 January 1990, it is intended to be a period in which the international community, under United Nations auspices, builds international cooperation in order to reduce loss of life, property damage, and the social and economic disruption caused by natural disasters.

More specifically, the Decade's goals are to:

- Improve each country's capacity to mitigate the effects of natural disasters;
- Devise guidelines and strategies for applying existing knowledge;
- Foster scientific and engineering endeavours to close critical gaps in knowledge; and
- Develop and disseminate information on and evaluate the effectiveness of measures for assessing, predicting, preventing and mitigating natural disasters through programmes of technical assistance and technology transfer, demonstration projects, education and training. Governments are also asked to set up a national assessment of risks, national and/or local prevention and preparedness plans, and global, regional, national and local warning systems by the year 2000.

An International Framework of Action for the Decade was adopted in 1989, setting out some of the activities to be undertaken at the national level as well as within the United Nations system. The Decade secretariat, established in Geneva in 1990, now forms part of the Department of Humanitarian Affairs (DHA) of the United Nations. A Scientific and Technical Committee (STC), comprising up to 25 high-level specialists, provides guidance on substantive issues, while a Special High-Level Council, composed of well-known personalities, assists in creating global awareness about natural disaster reduction. In addition, the second Wednesday of each October has been designated the International Day for Natural Disaster Reduction, to draw attention to efforts now under way and to encourage

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more concerted global action. A world conference of national committees for the Decade is planned for spring 1994, to evaluate progress of the Decade at its mid-term.

UNITED NATIONS ROLE BROADENED

Although the United Nations has long provided assistance to countries affected by natural and manmade disasters—the Office of the United Nations Disaster Relief Coordinator (UNDRO) was established in 1971 as the focal point for the United Nations system's disaster relief and mitigation activities—it has recently stepped up its involvement in this area. DHA, which incorporates the former UNDRO as well as other offices dealing with complex emergencies and the IDNDR secretariat, is headed by an Under-Secretary-General who also serves as the United Nations Emergency Relief Coordinator. The Department, with offices in New York and Geneva (the latter being known as DHA-UNDRO), helps to improve the coordination of humanitarian assistance in the United Nations and ultimately to create a more effective and streamlined emergency management capacity for handling specific complex emergencies. Policy coordination and leadership is exercised in New York, while the technical operational part of emergency management continues to be carried out in Geneva.

As a result of growing needs for disaster relief, international aid increased significantly in recent years and totalled some $2.86 billion in 1990-1991, with about $207 million channelled through UNDRO alone, or 15 times more than in 1986-1987. It is expected that with the integration of UNDRO into DHA, an even larger amount of international assistance will be channelled through the United Nations system in future years.

In times of disaster, it is DHA's role to assess the damage and evaluate emergency needs, mobilize aid from the international community and coordinate relief activities. Building on earlier work done by UNDRO before its incorporation into the Department, DHA also has a role to play in system-wide preparedness. Along with other United Nations agencies, it continues to provide technical assistance to developing countries enabling them to forecast and monitor seismic and volcanic activity, landslides, floods and coastal storms, to prevent floods and to mitigate and assess resulting damage. Of particular importance are training activities, such as the three-year Disaster Management Training Programme (DMTP) jointly operated by DHA and the United Nations Development Programme (UNDP), with the overall goal of improving the capacity of both organizations in the areas of disaster mitigation and response. By the end of 1991, the Programme had produced 14 training modules and guides as well as two training videos and sponsored more than 25 courses at subregional and national levels. A Disaster Management Manual has also been prepared which describes the policies and procedures for coordinated inter-agency operational preparedness and response.

Scenario studies of potential high-risk events in disaster-prone areas, and the development of a local disaster mitigation "culture" with indigenous roots, are other undertakings of DHA-UNDRO, which also publishes surveys of risks, training guidebooks, reports on specific disaster situations and statistical studies of the economic impact of disasters in order to quantify how disaster-prone individual countries are. It maintains a disaster management reference library, is producing a multilingual IDNDR terminology, and sponsors fellowships and seminars.

DISASTERS, THE ENVIRONMENT AND DEVELOPMENT: A COMPLEX LINK

"The rising toll of losses from natural disasters is an important but often neglected manifestation of global change," says James Bruce, Chairman of the Scientific and Technical Committee. And that leads to a vexing question: "Are the natural hazards that turn into disasters more severe and frequent than in earlier decades, or has the growing human population and its activities become increasingly exposed to the hazards, turning hazard into disaster?"

Dr. Bruce points out the human influences on natural hazards, including the removal of forests from the slopes of river basins, the erosion of agricultural soils leading to sedimentation of river mouths, and channel obstructions which contribute to increased flood levels and damage. The impact of global warming on certain types of disasters is a matter of growing international concern as well. By the same token, some kinds of natural disasters—notably volcanic eruptions—have significantly changed the composition of the atmosphere: Some meteorologists theorize that the lava flows from the 1990 eruption of Mt. Pinatubo in the Philippines are responsible for a considerable cooling of vast sections of the Earth in 1992, although others would argue that the burning oil wells of Kuwait share the blame. There is also speculation that when the drought in the western Sahel ends, there will be more frequent and severe hurricanes in North America.

"There is little doubt," however, warns Dr. Bruce, that "the main factor causing the increased natural disaster losses is not changes in natural hazards, but the increasing vulnerability of human communities to these environmental hazards. *The major global change affecting the damage statistics is the rapidly increasing population and human activity in coastal zones and in earthquake, drought and flood-prone areas of the world.*"

Although economic development reduces disaster losses in the aggregate, as Caroline Guarnizo, Staff Director of the United States Committee for the IDNDR, points out, it can also increase the risk of disasters: She cites dams built in seismic zones, agriculture in once-forested areas and construction in flood plains. Changing economic relations, she notes, have forced populations, and especially the poor, to move into hazardous locations.

"By the year 2010 more than 50 per cent of the world population will live in urban centres," notes Jan Eliasson, Under-Secretary-General for Humanitarian Affairs. "Such intense urbanization will increase vulnerability to a broad variety of hazards and give disaster mitigation activities even greater urgency," he adds.

The world will face more and worse disasters in the future, argues another member of the U.S. Committee, Henry Quarantelli, saying that losses will be greater due to new and increasing kinds of technological accidents that can be triggered in disasters, such as chemical leaks in earthquakes. Furthermore, he warns, technological advances add complexity to old threats (fire prevention measures in high-rise buildings, for example, retard fires but create toxicity risks). There are also new versions of past dangers, and exposure to new risks because of our dependency on such new technologies as computers.

The link between disasters, the environment and development is further illustrated by the rising sea levels caused by global warming. With global mean temperatures projected to increase 0.3 degrees Centigrade per decade during the next century, a 6-centimetre-per-decade rise in sea levels is expected. Some 60 per cent of the world's population already lives in coastal areas, while 65 per cent of cities with populations above 2.5 million are located along coasts. "The frequency of severe storm surges in the island nations of the Pacific and Indian Oceans, the Caribbean Sea, the Bay of Bengal, the Philippines, Florida and other regions will be exacerbated by sea level rise," warns Dr. Bruce.

In his report on the work of UNDRO in 1991, the Secretary-General leaves no doubt as to the outcome of increased development:

"The stark reality of disaster occurrence is that the number of persons at risk increases with popula-

tion growth. On top of this, the level of vulnerability of the growing population rises faster because of the progressive overspill of the least privileged and most poorly protected people into zones of ever higher risk. *Except where the effort invested in mitigation equals the population growth rate plus the accelerating vulnerability factor, the magnitude of disasters will inevitably continue to grow."*

For all these reasons, natural disaster reduction is a key element in the Rio Declaration, adopted in June 1992 by the United Nations Conference on Environment and Development: Principle 18 states, "States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to help States so afflicted."

"Natural disasters frequently set back the hard-won economic development of developing countries, with periodic drops in national economic output highly correlated with the occurrence of major natural disasters," says Dr. Bruce. And since about 95 per cent of disaster-related deaths occur in the developing world, the Decade is, as he notes, an excellent opportunity to improve international cooperation to reduce those tragic losses.

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EARTH SUMMIT

PRESS SUMMARY OF AGENDA 21

United Nations
Conference on
Environment and
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FINAL TEXT

UNITED NATIONS

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INTRODUCTION

On 22 December 1989, the United Nations General Assembly called for a global meeting that would devise strategies to halt and reverse the effects of environmental degradation "in the context of increased national and international efforts to promote sustainable and environmentally sound development in all countries".

Agenda 21, adopted by the United Nations Conference on Environment and Development on 14 June 1992, is the international community's response to that request. It is a comprehensive programme of action to be implemented — from now and into the twenty-first century — by Governments, development agencies, United Nations organizations and independent sector groups in every area where human (economic) activity affects the environment.

The programme should be studied in conjunction with the Rio Declaration on Environment and Development and the principles for the sustainable management of forests. These were also adopted at the Conference, known as the Earth Summit, which was held from 3 to 14 June 1992 in Rio de Janeiro, Brazil.

Underlying Agenda 21 is the notion that humanity has reached a defining moment in its history. We can continue our present policies which serve to deepen the economic divisions within and between countries; which increase poverty, hunger, sickness and illiteracy worldwide; and which are causing the continued deterioration of the ecosystem on which we depend for life on Earth.

Or we can change course. We can improve the living standards of those who are in need. We can better manage and protect the ecosystem and bring about a more prosperous future for us all. "No nation can achieve this on its own," states Mr. Maurice Strong, Secretary-General of the Conference, in the preamble to Agenda 21. "Together we can — in a global partnership for sustainable development."

This press summary is not an official document. It has been issued to help journalists become familiar with the programme adopted by Governments. It was prepared by the Communications and Project Management Division, Department of Public Information, as part of the United Nations information programme on sustainable development.

The complete text of Agenda 21 can be found in document A/CONF.151/26, Vols. I-III and will also be issued as a UN Sales Publication.

INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES

(Section I, Chapter 2 of Agenda 21)

Policies that affect trade and the flow of global finances have a major impact on sustainable development. Developing countries are weighed down with external indebtedness, inadequate development finance, barriers to Northern markets and falling prices for the commodities which dominate many economies in terms of production, employment and export earnings.

Agenda 21 proposals in this area aim to liberalize trade, make trade and environment mutually supportive, provide adequate financial resources, deal with international debt and encourage macro-economic policies conducive to environment and development.

Removing distortions in international trade is essential, in particular substantial and progressive reduction in support and protection of agriculture — covering internal regimes, market access and export subsidies. In this and other sectors, including industry, protectionism should be stopped and tariff and non-tariff barriers should be removed. Developing countries should diversify their economies in order to reduce dependence on commodity exports.

Environment and trade policies should be mutually supportive. Some environmental standards valid for developed countries may have unwarranted costs in developing countries. The role of the General Agreement on Tariffs and Trade (GATT) should be clarified. Industry should be encouraged to play a constructive role. Environmental concerns should not be used as an excuse for restraining trade.

Sustainable development requires increased investment in developing countries, and the efficient use of financial resources. Many developing countries have experienced a decade-long negative net transfer of financial resources, mostly for debt-servicing. Macro-economic conditions that encourage a stable and predictable international economic environment should be encouraged, including stable interest and key exchange rates, stimulation of savings and reduction of fiscal deficits. Countries should remove barriers caused by bureaucratic inefficiencies, encourage the private sector and foster entrepreneurship.

Proposed activities to promote sustainable development through trade during 1993-2000 would cost an estimated $8.8 billion from the international community on grant or concessional terms. Technical cooperation on macro-economic policies would cost $50 million annually.

COMBATING POVERTY

(Section I, Chapter 3 of Agenda 21)

Poverty is a complex multidimensional problem with both national and international origins. No one solution will apply globally; country-specific programmes are crucial. The eradication of poverty and hunger, greater equity in income distribution and human resources development remain major challenges everywhere. All countries must cooperate and share responsibility.

Agenda 21 proposals cover population policies, health care and education, the rights of women and the role of young people, indigenous people and local communities in order to enable all people to achieve sustainable livelihoods. Policies need to simultaneously address development, sustainable resource management and poverty eradication.

Governments should, among other things, support a community-driven approach to sustainability by empowering local and community groups; generate employment by giving high priority to basic education and professional training; and set up an effective primary and maternal health care system accessible to all.

Women should have full participation in decision-making. Women and men should have the same right to decide freely and responsibly on the number and spacing of their children. Health facilities should include women-centred, women-managed reproductive health care services, including pre-natal care. Women should be able to fully breast-feed at least during the first four months after birth.

Food security should be promoted as part of sustainable agriculture. The urban poor should be given credit; and the landless poor provided with access to land and natural resources and the means of production. The poor should have access to fresh water and sanitation.

Activities to combat poverty will cost an estimated $30 billion annually between 1993 and 2000, including about $15 billion from the international community on grant or concessional terms. This overlaps estimates in other parts of Agenda 21.

CHANGING CONSUMPTION PATTERNS

(Section I, Chapter 4 of Agenda 21)

Poverty and environmental degradation are closely interrelated. While poverty results in environmental stress, the major cause of global environmental deterioration is an unsustainable pattern of consumption and production, particularly in the industrialized countries, which aggravates poverty and imbalances.

Achieving sustainable development will require efficiency in production and changes in consumption in order to optimize resource use and minimize the creation of waste. This will require reorienting patterns of development in industrial societies which have been copied in much of the developing world.

Proposals in Agenda 21 call for greater attention to issues around consumption and for new national policies to encourage the shift to sustainable consumption patterns. Other chapters of Agenda 21 address related issues such as energy, transportation, wastes, economic instruments and the transfer of environmentally sound technology.

All countries, led by developed countries, should strive to promote sustainable consumption patterns. If developing countries are to avoid environmentally hazardous levels of consumption, they will require access to improved technology and other assistance from industrialized countries.

More research on consumption is needed. Some economists question traditional concepts of economic growth and underline the importance of pursuing economic objectives which take account of the full value of natural resources.

New concepts of wealth and prosperity should be developed which allow higher standards of living through changed lifestyles that are less dependent on the Earth's finite resources and more in harmony with its carrying capacity. This idea should be reflected in new systems of national accounts and other indicators of sustainable development.

To encourage greater efficiency in the use of energy and resources, governments should reduce the amount of energy and materials used per unit in the production of goods and services, promote the dissemination of existing environmentally sound technologies, promote research and development in environmentally sound technologies, assist developing countries in using these technologies and encourage the use of new and renewable sources of energy and natural resources.

To minimize the generation of wastes, Governments, together with industry, households and the public, should encourage industrial recycling, reduce wasteful packaging and promote environmentally sound products. Governments can exercise leadership through their own purchasing power.

Environmentally sound pricing policies (environmental charges, taxes and other mechanisms) which make clear to producers and consumers the costs of energy, materials, natural resources and the generation of wastes, can help to achieve significant changes in consumption and production patterns.

DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY

(Section I, Chapter 5 of Agenda 21)

The growth of world population and production combined with unsustainable consumption patterns has put increasingly severe stress on the life-supporting capacity of the planet, and has affected the use of land, water, air, energy and other resources.

There is a need to develop strategies to mitigate both the adverse impact on the environment of human activities as well as the adverse impact of environmental change on human populations.

Agenda 21 proposes that population factors be thoroughly researched. A better understanding is needed of the relationships among demographic dynamics, technology, cultural behaviour, natural resources and life support systems. International education on the urgency of population issues should be improved.

Population concerns should be more fully integrated into national planning, policy and decision-making. Policies should combine environmental concerns and population issues in a holistic view of development. The primary goals should include alleviation of poverty; secure livelihoods; good health; quality of life; improvement of the status and income of women, their access to schooling and professional training and fulfilment of their personal aspirations; and empowerment of individuals and communities.

Since large increases in the size and number of cities will occur in developing countries under any likely population scenario, greater attention should be given to improved municipal management and local government.

To implement population programmes, Governments, local communities, women's organizations and non-governmental organizations need to develop a framework for action that allows for full community involvement in decision-making. Reproductive health programmes and services should be developed and enhanced to reduce maternal and infant mortality and enable women and men to fulfil their aspirations in terms of family size.

An estimated $7 billion is needed annually for population activities during 1993-2000, including about $3.5 billion from the international community on grant or concessional terms. Also needed annually from international sources is about $90 million to assess the implications of national demographic trends and factors, and about $10 million to research the links between population and sustainable development.

PROTECTING AND PROMOTING HUMAN HEALTH

(Section I, Chapter 6 of Agenda 21)

Sound development is not possible without a healthy population. Most development activities affect the environment in a way that often causes or exacerbates health problems. At the same time, a lack of development adversely affects the health of many people.

Proposals in Agenda 21 focus on meeting primary health care needs, controlling communicable diseases, coping with urban health problems, reducing health risks from environmental pollution and protecting vulnerable groups such as infants, women, indigenous peoples and the very poor. Education, housing and public works should be part of an overall strategy for achieving health for all by the year 2000.

Governments should build basic health infrastructures, paying particular attention to the provision of safe water and food supplies, sanitation services, proper nutrition, health education, immunization and essential drugs. The transfer of health-care technology, training of personnel and capacity-building are also needed.

Environmental control measures are indispensable, especially in the area of water supply and sanitation, in order to curb many communicable diseases including cholera, malaria, schistosomiasis and diarrhoeal diseases.

HIV infection levels are expected to reach 30-40 million people by the year 2000. This will strain health care resources in many developing countries and have an increasingly devastating impact on women and children. Proposals call for the mobilization of all countries to prevent HIV infection.

Proposals for protecting infants and children call for strengthening services such as prenatal care, breast-feeding and immunization and nutrition programmes and undertaking adult education on disease prevention and treatment (such as the use of oral rehydration therapy for diarrhoea).

For municipal and local governments overwhelmed by urban health problems, the global objective is to achieve, by the year 2000, a 10 to 40 per cent improvement in health indicators for infant mortality, maternal mortality, percentage of low birth-weight newborns and specific indicators (e.g. tuberculosis as an indicator of crowded housing). The emphasis should be on strengthening "enabling strategies" that emphasize "doing with" rather than "doing for." Programmes should promote community involvement, public education and collaboration among various agencies.

Among the actions suggested for minimizing the hazards from pollution of the environment, workplaces and individual dwellings:

- developing technologies to control and prevent water and air pollution, including indoor air pollution;
- limiting the use of pesticides;
- improving solid waste disposal;
- promoting the introduction of environmentally sound technologies in the industry and energy sectors;
- encouraging industrial hygiene programmes;
- monitoring noise pollution;
- studying the health effects of ultraviolet radiation, which increasingly results from depletion of the stratospheric ozone layer.

The estimated annual cost (1993-2000) of Agenda 21 health proposals are as follows.

- To meet primary health care needs: $40 billion, of which $5 billion would come from the international community on grant or concessional terms.
- To control communicable diseases: $4 billion, including $900 million from international sources on grant or concessional terms.
- To protect vulnerable groups: $3.7 billion, including $400 million from international sources on grant or concessional terms.
- To cope with urban health problems: $222 million, including $22 million in international grants or concessional financing.
- To reduce the health risk from environmental pollution: about $3 billion, including $115 million in international grants or concessional funding.

PROMOTING SUSTAINABLE HUMAN SETTLEMENTS

(Section I, Chapter 7 of Agenda 21)

Agenda 21 proposals for improving the social, economic and environmental quality of human settlements and the living and working environments of all people, in particular the urban and rural poor, focus on planning and management methods in several programme areas:

- **Providing adequate shelter** — At least 1 billion people do not have access to safe and healthy shelter. The Global Strategy for Shelter to the Year 2000, adopted by the UN General Assembly in 1988, needs greater political and financial support.

▸ **Improving management of urban settlements** — By the turn of the century, the majority of the world's population will be living in cities. Despite their problems, urban areas generate 60 per cent of gross national product and can develop the capacity to sustain their productivity.

Countries should, among other things, accelerate efforts to reduce urban poverty, improve infrastructure and train a cadre of managers, technicians and administrators. To counter mass migration to crowded cities, rural employment opportunities and "intermediate cities" should be developed.

▸ **Promoting sustainable land-use planning and management** — Countries should make an inventory of their land resources and classify them according to most appropriate uses; environmentally fragile or disaster-prone areas should be identified for special protection measures.

Land-resource development policies should reflect the needs of all sectors of the population, particularly indigenous peoples, women, local communities, low-income urban dwellers and the rural poor.

▸ **Providing environmentally sound infrastructure facilities** — The sustainability of urban development depends greatly on the availability of water supplies, air quality, drainage, sanitation services and disposal of hazardous and solid wastes.

Countries should integrate infrastructure and environmental planning by the year 2000 so that they can provide such facilities by the year 2025.

▸ **Promoting energy-efficient technology, alternative and renewable energy sources and sustainable transport systems** — Transport accounts for 30 per cent of commercial energy consumption. Developing countries should promote reafforestation for biomass energy and increased use of solar, hydro and wind energy sources.

All countries should adopt urban transport plans favouring high-occupancy public transport; encourage non-motorized modes of transport by providing safe cycleways and footways; and encourage development patterns which reduce transport demand.

▸ **Enabling disaster-prone countries to plan for and recover from natural disasters** — Over the past two decades, natural disasters are estimated to have caused some 3 million deaths and affected 800 million people. Global economic losses are estimated at $30-50 billion a year.

Countries should develop a "culture of safety" through public education. Pre-disaster planning should include researching the risks of human settlement patterns, industries, toxic wastes and other activities and creating a corps of scientists and engineers to serve as emergency specialists. Post-disaster reconstruction and rehabilitation will require partnership with the international community.

▸ **Promoting sustainable construction industry activities** — The construction sector can assist in achieving many human settlement goals, including shelter, infrastructure and employment. At the same time, it can deplete natural resources, degrade fragile eco-zones, cause chemical pollution and injure human health by using hazardous building materials.

Countries should promote industries using indigenous building materials (based on locally available natural resources), energy-efficient designs and technologies, and labour-intensive construction and maintenance technologies to generate employment and upgrade the technical and managerial capacities of small entrepreneurs.

- Promoting **human resource development** and capacity-building in all the above programme areas.

Estimated annual costs (1993-2000) for human settlement programmes are as follows.

- To provide adequate shelter: $75 billion, including $10 billion from international sources on grant or concessional terms.
- To improve urban infrastructure and municipal services in developing countries: $100 billion, including $15 billion from international sources on grant or concessional terms.
- To promote sustainable land use: $3 billion, including $300 million from international sources on grant or concessional terms.
- Technical assistance to provide environmental infrastructure: $50 million in international grants or concessional funding (infrastructure costs are estimated in other chapters).
- To promote energy efficiency: financing is included in the estimates for Chapter 9 (atmosphere).
- External assistance for post-disaster investment: $50 million from international sources on grant or concessional terms.
- For sustainable construction industry activities: $40 billion, including $4 billion in international grants or concessional funding.
- To promote human resource development: $65 million from international sources on grant or concessional terms.

Note: Problems caused by human settlements are linked to issues of health (Chapter 6 of Agenda 21), atmosphere (Chapter 9), water (Chapter 18) and solid wastes and sewage (Chapter 21).

POLICY-MAKING FOR SUSTAINABLE DEVELOPMENT

(Section I, Chapter 8 of Agenda 21)

Decision-making in many countries tends to separate economic, social and environmental factors. Countries can no longer afford to make decisions without considering environment and development issues; a fundamental reshaping of the planning process may be necessary.

Agenda 21 proposes the full integration of environmental and developmental issues for government decision-making on economic, social, fiscal, energy, agricultural, transportation, trade and other policies. Governments should also seek a broader range of public participation.

Integrating environmental issues into policy-making will require more extensive information-gathering and improved ways for assessing environmental risks and benefits. Management techniques should be flexible enough to accommodate multiple goals and changing needs. Planning and management responsibilities should be delegated to the lowest levels of public authority, and indigenous methods of managing natural resources should be considered wherever possible.

Country-specific laws and regulations are among the most important instruments for transforming environment and development policies into action, not only through "command and control" methods but also as a framework for economic planning and market instruments.

However, many laws are *ad hoc* and piecemeal or lack the necessary institutional machinery and enforcement authority. Developing countries need help in drafting effective legislation, enforcing laws, creating judicial procedures, complying with international agreements and training their own experts in environmental law.

Prices, markets and government fiscal and economic policies play a complementary role in environmental policy-making. Environment costs should be incorporated in the decisions of producers and consumers, in order to reverse the tendency to treat the environment as a "free good" and to pass these costs on to other parts of society, other countries or to future generations.

Prices should reflect the scarcity and total value of resources and contribute toward preventing environmental degradation. Subsidies which do not conform with sustainable development objectives should be reduced or removed. New markets in pollution control and environmentally sound resource management should be created.

Governments should cooperate with business and industry to make use of economic instruments and market mechanisms to deal with energy, transport, agriculture, forestry, water, wastes, health, global and transboundary issues and technology transfer. Businesses and industries with expertise in environmental matters, including transnational corporations, should organize training programmes for the private sector and other groups.

Integrated environmental and economic accounting (IEEA) systems should be established in all countries. Better ways should be developed for measuring the value of natural resources and other services provided by the environment. National accounts should be expanded to accommodate IEEA as a complement to traditional national accounting practices.

The annual cost (1993-2000) of implementing these proposals is estimated at $63 million from the international community on grant or concessional terms.

PROTECTING THE ATMOSPHERE: MAKING THE ENERGY TRANSITION

(Section II, Chapter 9 of Agenda 21)

To protect the atmosphere, Agenda 21 focuses on four programme areas: (1) uncertainties in related scientific knowledge; (2) sustainable development in regard to energy, transport, industry, and land and marine resources; (3) stratospheric ozone depletion; and (4) transboundary air pollution.

Proposals in this chapter do not oblige any Government to exceed the provisions of the 1985 Vienna Convention for the Protection of the Ozone Layer, the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer (as amended in 1990) or the 1992 United Nations Framework Convention on Climate Change.

To address concerns over climate change and variability, air pollution and ozone depletion, better scientific understanding is needed of the various natural, economic and social processes that affect or are affected by the atmosphere.

Research and more extensive climatic observation should be promoted. There should be greater cooperation in: detecting and predicting atmospheric changes, and assessing their environmental and socio-economic impacts; identifying dangerous levels of pollutants and greenhouse gases; and building scientific capacities and exchanging atmosphere-related data and information.

Activities in this area will require an estimated $640 million per year (1993-2000) in international grants or concessional financing.

Energy is essential to economic and social development and improved quality of life. But current practices of production, transmission, distribution and consumption cannot sustainably meet increased needs. Controlling emissions of greenhouse gases will require greater efficiency, and increasing reliance on new and renewable energy sources. All energy use needs to respect the atmosphere, human health and the environment as a whole.

Developing countries need adequate fuel supplies to increase energy use. Some countries are highly dependent on income from the production, processing and export of fossil fuels, and it is difficult for many countries to switch to alternative fuels.

Agenda 21 proposals in regard to energy include the following:

- Cooperation in identifying economically viable, environmentally sound energy sources for sustainable development in developing countries.
- Use of environmental impact assessments and other national measures for sustainably integrating energy, environmental and economic policy decisions.
- Development and transfer of technologies for energy-efficiency, especially to modernize power systems, and for new and renewable energy systems.
- Regional coordination of energy plans and studies to determine the feasibility of distributing energy from new and renewable sources.
- Nationally appropriate administrative, social and economic measures to improve energy efficiency.
- Appropriate national efficiency and emission standards promoting technologies that minimize adverse environmental impacts.
- Product-labelling, in cooperation with the private sector, to inform decision-makers and consumers about opportunities for energy efficiency.

To limit, reduce or control atmospheric emissions from the transport sector, traffic and transport systems need to be better designed and managed. Cost-effective, more efficient, less polluting and safer rural and urban mass transit should be developed and promoted, along with environmentally sound road networks. Technology transfer, and the collection and exchange of relevant information, should be strengthened. National transport and settlement planning should be integrated.

Industrial development is essential for economic growth but industry is a major user of resources and producer of air emissions. To minimize pollution and damage to the atmosphere, Agenda 21 calls for national administrative, social and economic measures, where appropriate, that will encourage industry to: increase resource and materials efficiency, install pollution abatement technologies, replace

chlorofluorocarbons (CFCs) and other ozone-depleting substances with appropriate substitutes, and reduce wastes and by-products.

Certain **land-use** and resource practices can decrease greenhouse gas sinks and increase atmospheric emissions. The loss of biological diversity may reduce the resilience of ecosystems to withstand climatic variations and air pollution damage. Atmospheric changes can affect forests, biodiversity, freshwater and marine ecosystems, and economic activities such as agriculture.

Agenda 21 proposes that appropriate national administrative, social and economic measures be taken to encourage sustainable land use and resource practices. Such practices should: reduce pollution and limit greenhouse gas emissions; conserve natural resources; and be more resilient to atmospheric changes. Sinks and reservoirs of greenhouse gases, including biomass, forests and oceans, should be managed sustainably.

The estimated annual cost (1993-2000) of activities in energy, transport, industry and land use is $20 billion in international grants or concessional financing.

Recent data confirms that the Earth's stratospheric **ozone layer** is being depleted by reactive chlorine and bromine from human-made CFCs, halons and related substances. Atmospheric levels of these substances continue to rise.

Countries should ratify the Montreal Protocol and its amendments, and comply with its control and funding measures. They should replace CFCs and other ozone-depleting substances with holistically suitable substitutes. The estimated annual (1993-2000) cost of activities in this area is in the range of $160-590 million on grant or concessional terms.

Transboundary air pollution harms human health, and causes tree and forest loss and the acidification of bodies of water. There is a lack of data on pollution and its environmental and health effects outside Europe and North America. Developing countries' capabilities to measure and assess pollution need to be strengthened.

Regional agreements for pollution control should be established and/or strengthened. Early-warning systems and response mechanisms are needed for pollution from industrial accidents, natural disasters and the deliberate or accidental destruction of natural resources. Costs for technical assistance and pilot programmes in this area are included in estimates for the first two programme areas in this chapter.

AN INTEGRATED APPROACH TO LAND-RESOURCE USE

(Section II, Chapter 10 of Agenda 21)

Increasing human demand for land, a finite resource, and for the natural resources it supports is creating competition and conflict that results in land degradation. Resolving such conflict requires an integrated approach to land use that examines all needs so that the most efficient trade-offs can be made.

Agenda 21 proposals for sustainable land-resource management and use focus on decision-making. Integration means that environmental, social and economic issues should be considered simultaneously. Also to be taken into account are the economic role of women in agriculture and rural development, the rights of indigenous peoples, local communities and the question of protected areas and private property rights.

Governments should use legislation, regulations and economic incentives to encourage sustainable use and management of land resources, paying particular attention to agricultural land. Pilot projects should experiment with new methods of land management.

Research is needed to assess the impact, risks, costs and benefits associated with various land uses. These values should be included in national accounts.

Improved scientific understanding of land resources should be supported, with priority given to determining land capacity, ecosystem functions and the interactions among land uses and environmental systems.

To promote a high degree of popular participation in decision-making, environmental awareness campaigns should be launched. Regional cooperation and information-sharing should also be strengthened.

An estimated $50 million per year from international sources on grant or concessional terms will be needed during 1993-2000 for the programme proposed in this chapter.

Operational aspects of land planning and management are dealt with in other chapters of Agenda 21.

COMBATING DEFORESTATION

(Section II, Chapter 11 of Agenda 21)

Forest resources are essential to both development and the preservation of the global environment. Using them rationally can create employment, help alleviate poverty and provide a valuable range of products.

Mismanagement of forests from inadequate fire control, unsustainable commercial logging, overgrazing and the harmful effects of airborne pollutants is linked to degradation of soil and water sources, loss of wildlife and biological diversity and aggravation of global warming.

To support and develop the multiple ecological, economic, social and cultural roles and functions of trees, forests and forest lands, Agenda 21 calls on countries to strengthen their forest-related institutions and improve their technical and professional skills through measures such as:

- Promoting the participation of labour unions, rural cooperatives, local communities, indigenous peoples, youth, women, the private sector, users groups and non-governmental organizations in forest-related activities.

- Conducting research on forests, including gathering data on forest cover, areas suitable for afforestation and ecological values.
- Supporting and enhancing technology transfer and specialized training.

Urgent action is needed to conserve existing forests and to expand areas under forest and tree cover. Governments should create National Forestry Action Programmes for sustainable development of forests, support the implementation of the non-legally binding statement on forest principles adopted at the Earth Summit, and consider the need for appropriate arrangements to promote international cooperation on forest management, conservation and sustainable development of all types of forests.

Other proposals include:

- Creating and expanding Protected Area Systems.
- Promoting sustainable management of areas adjacent to forest.
- Carrying out revegetation and reafforestation in mountain areas, high lands, bare lands, degraded farm lands, arid and semi-arid lands and coastal areas.
- Developing planted forests to offset pressure on primary/old-growth forests.
- Protecting forests from pollutants, mining and shifting cultivation.
- "Greening" urban areas.
- Acknowledging the role of forests as national carbon reservoirs and sinks.
- Consolidating information on genetic resources and related biotechnology. Increasing action related to genetic improvement and application of biotechnology for improving productivity and tolerance to environmental stress through tree breeding, seed technology and germplasm banks.
- Surveying local/indigenous knowledge of trees and forests and their uses.

Environmentally sound technology, including biotechnology, is needed for all of these activities.

The survival of the forests and their continued contribution to human welfare depends on recognizing the social, economic and ecological values of trees, forests and forest lands, including the consequences of damage caused by their destruction. These values should be incorporated into national economic accounting systems.

Proposals for using forests in a way that reflects these values include:

- Promoting and popularizing non-wood forest products such as medicinal plants, dyes, fibres, gums, resins, fodder, cultural products, rattan and bamboo.
- Promoting small-scale forest-based enterprises that support rural development and local entrepreneurship.
- Promoting eco-tourism and wildlife management to generate rural income and employment without harmful ecological impacts.
- Using regulations and economic incentives to create a favourable climate for investment and management.
- Promoting more efficient forest harvesting for fuelwood and energy supply.

Supply and demand for forest products and services should be studied. Scientific investigations on non-timber forest products are needed.

A broad capacity-building effort is urgently needed so that countries can monitor forests (an essential requirement if programmes in Agenda 21 are to be implemented). Governments and institutions should establish and/or strengthen national assessment and observation systems for forests, forest resources and forest programmes. This will require new data systems and statistical modelling, remote sensing, ground surveys and other technological innovations.

Annual costs for combating deforestation from 1993 to 2000 are estimated at about $32 billion, including $3.2 billion in international grants or concessional funding.

HALTING THE SPREAD OF DESERTS

(Section II, Chapter 12 of Agenda 21)

Desertification affects the lives of about one sixth of the world's population, 70 per cent of all drylands — amounting to 3.6 billion hectares — and one quarter of the total land area of the planet. The results include poverty, decline in soil fertility and degradation of rangeland, rainfed croplands and irrigated land.

Agenda 21 states that the priority in combating desertification should be preventive measures for lands that are not yet degraded or which are only slightly degraded. However, severely degraded areas should not be neglected.

For regions prone to desertification and drought, better information and monitoring systems are needed to identify priority areas for action. Governments should establish and/or strengthen national systems, which should also measure the economic and social consequences of desertification. Regional programmes such as the Permanent Inter-State Committee on Drought Control in the Sahel (CILSS) and international organizations such as the Sahara and Sahel Observatory should be supported.

To combat desertification, Governments should:

- Adopt sustainable land-use policies and sustainable management of water resources.
- Use environmentally sound agricultural and pastoral technologies.
- Carry out accelerated afforestation and reafforestation programmes using drought-resistant, fast-growing species.
- Integrate indigenous knowledge related to forests, forest lands, rangeland and natural vegetation into research activities.

Proposals call for the eradication of poverty and promotion of alternative livelihoods in arid and semi-arid areas where traditional livelihoods based on agro-pastoral systems are often inadequate and unsustainable because of drought and demographic pressure. Governments should adopt a decentralized approach to land-resource management and create or strengthen rural organizations and rural banking systems.

Because land-use and development are intertwined, action plans to combat desertification and drought need to be integrated into national environmental planning and development plans. Governments need

to strengthen institutional capacity to develop and implement such plans; this will require increased regional and international cooperation and support.

An intergovernmental committee established by the United Nations General Assembly should draft an international convention to combat desertification, particularly in Africa.

Drought in sub-Saharan Africa led to the deaths of an estimated 3 million people in the mid-1980s and cost dearly in terms of lost production and diversion of development resources. Drought preparedness and drought-relief measures should include early-warning systems, contingency crop-planting linked to weather forecasts and strategies for importing, storing and transporting food during emergencies. Programmes for coping with refugees created by drought should be designed.

Popular support is needed for activities related to desertification and drought control. Proposals call for environmental education, technological training and support for local communities, particularly women and indigenous groups.

In addition to the costs of programmes to combat poverty and promote sustainable agriculture which are estimated in other chapters, the total annual cost (1993-2000) of proposals to reduce desertification and prepare for drought is estimated to be about $8.7 billion, including nearly $4.9 billion in international grants or concessional funding.

PROTECTING MOUNTAIN ECOSYSTEMS

(Section II, Chapter 13 of Agenda 21)

Mountains are an important source of water, energy, minerals, forest products, agricultural products and recreation. They are storehouses of biological diversity and endangered species and an essential part of the global ecosystem.

Mountain ecosystems are highly vulnerable and are increasingly susceptible to soil erosion, landslides and rapid loss of habitat and genetic diversity. Widespread poverty and expanding populations among mountain inhabitants result in deforestation, cultivation of marginal lands, excessive livestock grazing, loss of biomass cover and other forms of environmental degradation.

About 10 per cent of the world's people depend on mountain resources. Nearly half are affected by the degradation of mountain watershed areas.

Agenda 21 proposals focus on improving knowledge about ecology and sustainable development of mountain ecosystems, and on promoting watershed development and alternative employment for people whose livelihoods are linked to practices that degrade mountains.

Not enough is known about mountain ecosystems. The creation of a global mountain database is vital for launching programmes that would contribute to sustainable development of mountain ecosystems.

Countries should create incentives for local people to engage in conservation practices; diversify mountain economies; establish natural reserves in species-rich areas; and identify areas most vulnerable to erosion, floods, landslides, earthquakes, avalanches and other natural hazards, and to air pollution from industrial and urban areas.

Promoting integrated watershed development programmes through the participation of local people is a key to preventing further ecological damage. Proposals seek to ensure the appropriate use of land by the year 2000 to prevent soil erosion, increase biomass and maintain the ecological balance.

Sustainable tourism, fisheries, environmentally sound mining, beekeeping, the cultivation and processing of medicinal and aromatic plants and other alternative activities at the village level should be encouraged to protect the livelihoods of local communities and indigenous peoples.

Planning for mountain disasters and floods should include hazard-prevention measures, risk zoning, early-warning systems, evacuation plans and emergency supplies.

The estimated annual cost (1993-2000) of proposals in this area is $13 billion, including $1.9 billion from international sources on grant or concessional terms.

MEETING AGRICULTURAL NEEDS WITHOUT DESTROYING THE LAND

(Section II, Chapter 14 of Agenda 21)

The global population is expected to reach 8.5 billion by the year 2025, with 83 per cent living in developing countries. The demand for food is expected to increase by 50 per cent by the year 2000. The ability of agriculturalists to meet this challenge remains uncertain. Agenda 21 focuses on sustainable agriculture and rural development (SARD) to increase food production and conserve and rehabilitate land. Programme areas include:

▸ **Integrating sustainable development into agricultural policy and planning** — The absence of a coherent national policy framework for SARD is widespread and is not limited to developing countries. Agricultural policies need to be reviewed in relation to economic factors such as foreign trade, subsidies and taxes. Open trade and the removal of trade barriers should be encouraged. Demographic trends and population movements need to be taken into account. Laws, regulations and incentives that lead to food security and the transfer of appropriate farm technologies (such as food storage and distribution) need to be formulated.

▸ **Ensuring people's participation** — Women's groups, youth, indigenous people, local communities and small farmers need access to land, water and forest resources and to technologies, financing and services such as marketing, processing and distribution. Investment in land should be promoted by assigning clear titles, rights and responsibilities; strengthening rural institutions; providing technical training; and incorporating indigenous knowledge into the development of farm technology.

▸ **Improving farm productivity and diversifying rural employment** — Crop rotation, organic manuring and other techniques involving reduced use of agricultural chemicals should be developed.

Proposed improvements in infrastructure include financial networks, small-scale agro-processing units and rural service centres. To keep poor rural populations from using marginal lands, off-farm employment opportunities such as cottage industries, wildlife utilization, fisheries, light village-based manufacturing and tourism should be developed.

▸ **Harmonizing land resources planning** — Inappropriate land uses are a major cause of land degradation and depletion of land resources. Techniques for increasing production and conserving soil and water resources are available but not widely or systematically applied. Proposals call for involving farmers in the planning process, collecting and disseminating land resource data and establishing agricultural planning bodies at the national and local levels.

▸ **Conserving and rehabilitating land** — Soil erosion, salinization, waterlogging and loss of soil fertility are increasing in all countries. It is proposed that by the year 2000 national land resource surveys be conducted detailing the extent and severity of land degradation.

▸ **Conserving and sustainably using plant genetic resources** — Plant genetic resources for agriculture (PGRFA) are an essential resource for meeting future food needs. Threats are growing, efforts to promote genetic diversity are underfunded and understaffed, and in some cases the loss of diversity in gene banks is as great as it is in the field. *In situ* conservation areas and *ex situ* collection and germ plasma banks are needed. Better methods for researching and evaluating PGRFA should be encouraged. The benefits of research and development in plant breeding and seed production should be shared.

▸ **Conserving and sustainably using animal genetic resources** — There is a need for more and better animal products and for draught animals. The existing diversity of animal breeds should be catalogued, breeds at risk should be identified and preservation programmes should be put in place, including the use of cryogenic storage of germplasm.

▸ **Using integrated pest management and control** — Overuse of chemicals to control pests has had adverse effects on human health, the environment and on farm budgets. Integrated pest management — combining biological control, host plant resistance and appropriate farming practices
-- is the best option for the future. It should be accompanied by appropriate pesticide management, including proper labelling, research and development of pesticides that are target specific and that break down into harmless constituent parts after use.

▸ **Employing sustainable plant nutrition** — Plants which deplete the soil of nutrients cause the loss of soil fertility. To maintain soil productivity, proposals call for the widespread availability of fertilizers and other plant nutrient sources and for improving soil fertility management.

▸ **Making the energy transition in rural areas** — In rural areas of developing countries, the chief sources of energy are firewood, crop residues, manure and animal and human energy. To increase productivity and generate income, rural energy policies and technologies should promote a mix of cost-effective fossil and renewable energy sources.

▸ **Evaluating the effects of ozone layer depletion** — Depletion of Earth's protective stratospheric ozone layer allows dangerous ultraviolet radiation from the Sun to reach the planet's surface. The potentially adverse effect on plants and animals should be assessed.

Annual cost estimates (1993-2000) for agricultural proposals in Agenda 21 (not including farm-related water programmes, which are considered separately) are $31.8 billion, including $5.1 billion from international sources on grant or concessional terms. By programme area the cost estimates are:

- Agricultural policy: $3 billion, including $450 million from international sources.
- People's participation: $4.4 billion, including $650 million from the international community.
- Farm productivity: $10 billion, including $1.5 billion in international financing.
- Land resources planning: $1.7 billion, including $250 million from international sources.
- Land conservation: $5 billion, including $800 million from the international community.
- Plant genetic resources: $600 million, including $300 million in international financing.
- Animal genetic resources: $200 million, including $100 million from external sources.
- Integrated pest management: $1.9 billion, including external funding of $285 million.
- Sustainable plant nutrition: $3.2 billion, including $475 million from international sources.
- Energy transition: $1.8 billion, including $230 million in external financing.

SUSTAINING BIOLOGICAL DIVERSITY

(Section II, Chapter 15 of Agenda 21)

The objectives and activities in this chapter of Agenda 21 are also aimed at supporting the Convention on Biological Diversity.

The essential goods and services on the planet depend on the variety and variability of genes, species, populations and ecosystems. Biological resources provide food, clothing, housing, medicines and spiritual nourishment. Recent advances in biotechnology, based on the genetic material of plants, animals and micro-organisms, show great potential for agriculture and medicine.

Despite mounting efforts over the past 20 years, the loss of the world's biological diversity, mainly from habitat destruction, over-harvesting, pollution and the inappropriate introduction of foreign plants and animals, has continued. This now represents a serious threat to human development.

Proposals in Agenda 21 for conserving biodiversity call on Governments to: press for the early entry into force of the UN Convention on Biological Diversity; foster traditional methods and knowledge of indigenous people and their communities; share the benefits of biological resources, including biotechnology, in particular with developing countries; and develop national strategies for the conservation of biodiversity, the sustainable use of biological resources and the safe transfer of biotechnology, particularly to developing countries.

National surveys should be undertaken in order to compile an inventory of biological resources, improve scientific and economic understanding of the importance and functions of biodiversity and suggest priorities for action. The economic and social implications and benefits of protecting biodiversity should also be assessed. A global network should regularly monitor, update and report this information.

Environmental impact assessments should be made for development projects likely to affect biological diversity. Economic incentives should be used to encourage the conservation of biodiversity and sustainable use of biological resources.

Conservation of biological diversity should occur through *in situ* conservation of ecosystems and natural habitats and *ex situ* measures, preferably in the country where the species are found. The rehabilitation of damaged ecosystems and endangered species should be promoted. Sustainable practices in areas adjacent to protected areas should be encouraged.

Technical and scientific cooperation should be promoted, with special attention given to technology transfer, professional training programmes and developing research and management facilities such as herbaria, museums, gene banks and laboratories.

The estimated annual cost of conserving biological diversity during the period 1993-2000 is $3.5 billion. Half of this would have to come from international sources on grant or concessional terms.

ENVIRONMENTALLY SOUND MANAGEMENT OF BIOTECHNOLOGY

(Section II, Chapter 16 of Agenda 21)

Developments in the emerging field of biotechnology promise to make significant contributions to world development: better health care; enhanced food security through sustainable agricultural practices; improved supplies of drinking water; more efficient industrial processes for transforming raw materials; support for sustainable methods of afforestation and reafforestation; and detoxification of hazardous wastes. Proposals in Agenda 21 focus on:

- **Food** — Biotechnology can increase the nutritional value of crops, livestock and fish and the shelf-life of food and animal feed products. It can also improve agricultural output through integrated pest, disease and crop management techniques that eliminate dependence on agrochemicals.

- **Health** — Biotechnology can help combat communicable diseases through new and improved vaccines, drugs, medicines and diagnostics and can detect pollutants and pathogens in drinking water.

- **Environmental protection** — Biotechnology can help to: rehabilitate degraded ecosystems and landscapes through reafforestation and afforestation, cultivation of new plant varieties and soil conservation; reduce the risks of hazardous wastes through biological treatments; decrease waste volume through the use of biodegradable materials; and remove pollutants from the environment, such as accidental oil spills. Sound management of biotechnology also preserves biological diversity.

Most of the investment in modern biotechnology has been in the industrialized world. Biotechnology offers new opportunities for global partnerships between these countries — rich in technological expertise — and developing countries which are rich in biological resources.

Technology transfer, professional training, information-gathering, scientific exchanges, research and development, venture capitalization and other capacity-building measures should be promoted and accelerated.

Internationally agreed principles on safe management of biotechnology and on risk assessment need to be further developed. The preparation of international guidelines should be considered.

The traditional methods and knowledge of indigenous people and their communities should be protected, and indigenous peoples should share in the economic and commercial benefits arising from biotechnology.

Annual costs for managing and enhancing biotechnology from 1993 to 2000 are estimated at $20 billion, with $197 million coming from international funding sources on grant or concessional terms.

SAFEGUARDING THE OCEAN'S RESOURCES

(Section II, Chapter 17 of Agenda 21)

More than 70 per cent of the Earth's surface is covered by water. The activities of humans on land are a major threat to sustaining the biological richness of oceans and coastal areas.

Proposals in Agenda 21 focus on threats posed by sedimentation, pollution, harmful fishing practices and climate change.

Many programme areas share common problems: lack of data, lack of planning and management, lack of international coordination and technology transfer, and inadequate funds.

Coastal areas. Some 60 per cent of the world's people live within 60 kilometres of the shoreline.

Fishing, commerce, shipping and tourism often create problems that threaten sustainable development: chemical and bacterial pollution; sediment from cleared lands; destruction of habitats; runoff of nutrients that overstimulates aquatic plant growth; and poor, crowded and unsanitary human settlements.

Exclusive Economic Zones can create areas where states manage the development and conservation of natural resources.

Efforts must be made to create inventories and to plan and manage coastal resources, including habitats, infrastructure, human development, education, biodiversity and economic activities. Regional cooperation is needed to integrate plans.

An estimated $6 billion a year will be needed between 1993 and 2000 to implement coastal management programmes, including $50 million in international grants or concessional financing.

The marine environment is degraded by sewage, agricultural chemicals, synthetic organic compounds, litter, plastics, radioactive substances and hydrocarbons. Land-based activities contribute 70 per cent of the pollution, which enters the oceans through the atmosphere and rivers. Much waste is toxic and enters the food chain. Ships and dumping at sea contribute about 10 per cent of ocean pollution.

Agenda 21 proposals focus on preventing problems. Improving coastal management will reduce ocean pollution. The Montreal Guidelines for the Protection of the Marine Environment from Land-Based Sources and other regional agreements should be strengthened.

Controlling pollution from shipping will require improved monitoring and compliance with shipping protocols and agreements. Stricter international regulations to reduce the risk of accidents are also needed. Ocean spill response centres and a global database on marine pollution should be set up. Port facilities are needed to collect rubbish, oil and chemical residues from ships.

An estimated $200 million per year in international grants or concessional financing will be needed to protect the marine environment during 1993-2000.

Living marine resources in the high seas. Problems are caused by unregulated fishing, overcapitalization, excessive fleet size, vessel reflagging (to escape control), gear that does not catch selectively, unreliable databases and a lack of cooperation between nations. As soon as possible, an intergovernmental conference should address problems relating to the conservation of fish stocks that are migratory or straddle national and international waters.

Marine species should be restored and maintained at sustainable levels. Selective fishing gear should be used to minimize waste. Effective monitoring and enforcement of existing agreements, such as the UN Convention on the Law of the Sea and improved monitoring (and compliance) by nations of ships flying their flag is needed. Dynamiting and poisoning should be prohibited. Large-scale drift-net fishing should be controlled.

An estimated $12 million per year in international grants or concessional funding from 1993 to 2000 will be required for this programme.

Marine resources under national jurisdiction provide 95 per cent of the 80 to 90 million tons of fish and shellfish caught each year. They are an important source of protein for many countries. Over the last 40 years, the annual tonnage of yield has increased fivefold.

National fisheries now face overfishing, incursions by foreign fleets, ecosystem degradation, excessive fleet sizes, overcapitalization, gear that is not selective and competition between large-scale and local fishing. Coral reefs and coastal habitats like mangroves and estuaries are highly productive but are now threatened by a variety of sources.

Exclusive Economic Zones are one means of protecting and sustaining marine resources in order to meet long-term social, economic and development goals. Indigenous people must be represented in the planning process.

Also proposed is the restoration of depleted species, promotion of the use of selective fishing gear and preservation of ecosystems. Improved inventory is needed together with the management and development of coastal marine resources, particularly through small-scale projects. Waste from fishing must be reduced and the quality and better use of under-utilized species should be improved.

Programmes to restructure coastal fisheries would cost an estimated $6 billion per year from 1993 to 2000, including $60 million from the international community on grant or concessional terms.

The marine environment is vulnerable to **climate and atmospheric change, including ozone depletion**. The impact of rising sea levels and increased ultraviolet radiation will require extensive data collection.

Agenda 21 proposes that measurement, collection and data management techniques be standardized to permit a global exchange of research and information on climate and how climate change will impact coastal and marine resources. An estimated $750 million, including $480 million from international sources on grant or concessional terms, will be needed annually during 1993-2000 for this purpose.

Regional and international cooperation is essential in order to implement programmes on oceans and marine resources. An increased effort should be made within the UN and at many other levels. It is estimated that support of international cooperation at all levels will cost $50 million in grants or concessional financing a year from 1993 to 2000.

Small islands. Sustainable development in small islands is complicated by small size, limited resources, geographic dispersion, isolation and ecological fragility. Global warming and a rise in sea level will render small islands more vulnerable to storms and could cause the loss of some or all territory.

Developed countries should help small islands make an inventory of their assets and plan for sustainable development of cultural, biological and economic resources. The consequences of possible climate change and sea-level rise must be taken into account.

Centres for developing and communicating scientific information and advice on appropriate technologies for small islands should be established.

The programme of technical exchange and planning would cost an estimated $130 million per year from 1993 to 2000, including $50 million in international grants or concessional financing.

PROTECTING AND MANAGING FRESHWATER RESOURCES

(Section II, Chapter 18 of Agenda 21)

Freshwater resources are an indispensable part of all terrestrial ecosystems. Floods and droughts, part of the hydrological cycle, have become more extreme in some regions. Global climate change and atmospheric pollution could affect the availability of fresh water and threaten ecosystems, particularly in low-lying coastal areas and small islands.

Adequate supplies of good quality water must be maintained for the entire world population, while preserving ecosystems. Human activities must adapt to the limits of nature's capacity to absorb their impact. Water-related diseases, which cause a third of all deaths in developing countries, must be fought. Innovative technologies are needed to fully utilize water resources and protect them against pollution.

Integrated planning and management of all types of water resources are needed to address the widespread scarcity and gradual destruction of these resources in many regions. Rational development plans must encompass multiple uses, including: water supply and sanitation, agriculture, industry, urban development, hydropower generation, inland fisheries, transport and recreation, while conserving water and minimizing wastage. Control of floods and sedimentation should be a priority.

By the year 2000, all states should, if capable, initiate national water management programmes, including costs, targets, institutions and laws.

Freshwater resources should be assessed and protected and national goals set for freshwater use, quality, protection and improvement. Research, data storage, modeling and wide dissemination of information connected to freshwater issues is also needed. The relationship between freshwater supplies and the impact of development must be clearly modeled to permit adequate planning.

Standards for discharges should be set, facilities built to treat sewage and the principle of "the polluter pays" invoked.

There needs to be more and better facilities to treat industrial waste and sewage. Mandatory environmental impact assessments on major development projects affecting water supplies should be carried out; pesticides and nitrate fertilizers should be used rationally; purified waste water should be used in agriculture, industry, aquaculture and other sectors; and there should be increased development and use of biotechnology.

Aquifers should be protected from toxics and from overpumping that leads to saltwater intrusion. Improved landfill design and management is required. Agricultural lands, aquatic habitats and ecosystems should be rehabilitated and wetlands protected. Programmes for monitoring water quality should be expanded.

Changes will be needed in national and international laws, in the training of personnel to manage water issues and in funding. Developing low-cost services that can be sustained at the community level will be crucial.

Agenda 21 calls for improving education about hygiene and greatly reducing illnesses associated with water, beginning with the eradication of guinea worm disease and river blindness by 2000.

Urban freshwater supply. By the year 2005, some 60 per cent of the world's people (some 5 billion people) will live in cities.

Agenda 21 calls for a supply of 40 litres of safe water per person per day; the establishment of discharge standards for municipal and industrial effluent; and the environmentally sound collection, recycling, or disposal of 75 per cent of the solid waste from urban areas.

In rural areas, a balance must be struck between using water for sustainable food production and for other purposes. Water-saving technology and management skills must be developed to provide for all demands -- from livestock and fisheries to human consumption. New irrigation schemes must be integrated into this balance.

Global climate change could have a great impact on fresh water supplies. Entire growing zones could change; intrusions of salt water could have a major impact on aquifers and low coastal areas. Research on impact is needed; contingency planning is called for.

The total cost of these programmes is estimated at $54.7 billion, including about $17 billion from international sources on grant or concessional terms.

SAFE USE OF TOXIC CHEMICALS

(Section II, Chapter 19 of Agenda 21)

Thousand of chemicals are used in every aspect of human endeavour but the long-term health and environmental risks of most of them are unknown. Ninety-five per cent of chemical manufacturing involves only 1,500 chemicals but crucial data for risk assessment are lacking for many of them. Chemicals banned in one country as hazardous are routinely sold and shipped to other countries, often to developing nations.

Some industrial areas have been grossly contaminated by chemicals, resulting in damage to human health, genetic structures and human reproduction. Lack of information and information-sharing mechanisms may have a serious impact on human health, the environment and on future generations.

Proposals in Agenda 21 include the following:

Improved risk assessment is essential. Communities and individuals have the right to know when they are dealing with toxic chemicals. Approximately 100,000 chemical substances are used in commerce but only a small percentage have been assessed, including commonly used pesticides.

Some 500 chemicals should be assessed by the year 2000 and the information shared internationally. Research leading to improved methods for assessing risk should be undertaken.

International labelling standards exist but are not yet available in the workplace or the home in all parts of the world. A multilingual system involving pictograms is recommended. Labelling should not be used to restrain international trade.

Prior Informed Consent (PIC) procedures identified in previous agreements on chemicals should be used. Negotiations now underway may ban producing countries from exporting chemicals that are banned in their domestic market. Governments and industry should improve and create additional national centres for information exchange on hazardous chemicals and their risks.

Risks can be reduced by using less hazardous chemicals or non-chemical technologies such as substituting biological pest controls for pesticides.

Risk reduction programmes should consider the entire life cycle of chemicals. Action should be taken in specific areas such as emission inventories, labelling, safe handling and exposure regulations and phasing out chemicals that are especially toxic or persistent in the environment.

Governments should consider adopting policies based on the principle of producer liability. Chemical accident response centres and national poison control centres should be established to ensure prompt diagnosis and treatment of poisonings.

Many countries lack national systems to cope with chemical risks, track usage of hazardous chemicals and collect evidence of misuse. National capabilities for managing chemicals need to be strengthened.

No global international agreement on traffic in toxic and dangerous products exists. Improved monitoring, detection and prevention measures are required as well as regional and international cooperation.

Some $600 million would be needed annually during 1993-2000 to strengthen national capacities to manage toxic chemicals, including $150 million in international grants or concessional financing. An additional $47 million from international sources would be needed yearly for risk assessment and reduction and to harmonize labelling practices and exchange information.

MANAGING HAZARDOUS WASTES

(Section II, Chapter 20 of Agenda 21)

The uncontrolled production and disposal of hazardous wastes often creates problems years later with a high environmental cost to air, water, land, health and human productivity.

All countries produce and dispose of hazardous wastes on an increasingly large scale. Many -- especially developing countries -- are unaware of the hazards. Too often hazardous wastes have been shipped to nations that are unfamiliar with the dangers. Industrialized countries spend billions of dollars to clean up hazardous sites and evacuate residents from areas that have become health hazards.

Hazardous waste reduction should include setting goals for using cleaner manufacturing technology, recycling, substituting for hazardous materials and improving the transfer of clean technology. Governments are urged to provide domestic handling and recycling facilities for their own hazardous wastes.

International cost/benefit guidelines for hazardous waste production and management should be devised and the exchange of information through waste management centres at the national level should be improved.

Technology improvements leading to the reduction of hazardous wastes will require additional funding for research, demonstration projects and training. Legislation that supports source reduction through the "polluter pays" principle is required. Procedures for handling, storage, disposal and destruction of hazardous wastes over their entire life cycle should be improved.

To prevent innocent people from becoming victims of hazardous waste, many countries will need assistance in order to strengthen trained staffs and organizations that can deal with hazardous waste risk assessment, monitoring and management. Legislation and public information programmes are required. Hazardous sites must be cleaned up.

International cooperation is required to disseminate information on risks, to control transboundary shipping and to spread information on new technologies that will reduce the amount of hazardous wastes produced or improve methods for handling and disposal. Cooperation is also required to design, develop and strengthen individual nations' hazardous waste programmes and centres.

Governments should ascertain that their military establishments conform to their nationally applicable environmental norms in their treatment and disposal of hazardous wastes.

Governments are encouraged to adopt regulations that treat wastes in a manner consistent with regulations in the country of origin. A ban on exporting wastes to nations that do not have the capacity to deal with them in an environmentally sound way is proposed. Cooperation on regional waste recycling, reuse and recovery programmes is proposed. Several existing international agreements and conventions on traffic in hazardous wastes should be strengthened.

Preventing illegal traffic in hazardous wastes will require legislation, monitoring and enforcement programmes to ensure that penalties are in place and enforced.

The estimated annual cost (1993-2000) of managing hazardous wastes is $18.5 billion globally and $3.5 billion in relation to developing countries, including $500 million in international grants or concessional financing. An estimated $750 million a year will be needed from international sources to promote waste prevention and minimization.

SEEKING SOLUTIONS TO SOLID WASTE PROBLEMS

(Section II, Chapter 21 of Agenda 21)

Growing mountains of solid waste, including septic tank and sewage sludge, are a serious threat to surface water, ground water, the soil and the air.

Health, the quality of life and the potential for development are affected by poor management of solid wastes. Oceans are affected when wastes are dumped at sea and air quality deteriorates where wastes are burned in open pits.

By the end of this century, 2 billion people will be without basic sanitation. Some 5.2 million — including 4 million children — die each year from waste-related diseases. Half of the urban population in developing countries has no service for solid waste disposal. Globally, the amount of municipal waste produced is expected to double by the end of the century and double again before the year 2025.

Agenda 21 proposals for solid waste management focus on four programme areas.

Minimizing waste. This will require countries to establish targets for waste reduction that will influence patterns of production and consumption. Industrialized nations should set goals that would hold *per capita* waste production at levels that prevail in the year 2000. They should consider investing in waste minimization 1 per cent of their expenditures on solid waste and sewage disposal ($6.5 billion at current levels).

More research on clean technologies, new methods for sharing information internationally and incentives for reducing waste are needed. The ability to monitor and understand the solid waste production and disposal cycle must be improved.

Reuse and recycling become more economically attractive as disposal sites are filled or closed. Disposal costs are expected to double or triple by the end of the decade. National programmes for waste reuse and recycling should be in place by 2000 in industrialized countries and by 2010 in developing countries.

Recycling programmes must be expanded. Economic, market and legal incentives are needed to support reuse and recycling. Technologies for recycling plastic, rubber and paper should be priorities for transfer.

Home and community-based programmes, including separate collection of recyclable household wastes, must be set up. Environmentally sound waste disposal, particularly of sewage and sewage sludge, is necessary to protect human health as well as the environment.

An estimated $850 million will be needed annually (1993-2000) on grant or concessional terms for reuse and recycling programmes in developing countries.

International standards for **environmentally sound treatment and disposal** of waste must be established. Alternatives to dumping sewage sludge at sea must be developed. The capacity to monitor waste disposal and exchange information through an international clearinghouse must be developed.

All countries must establish waste treatment and disposal criteria and develop the ability to monitor the environmental impact of wastes by the year 2000. By 1995, industrialized countries should ensure that at least half of all sewage, waste waters and solid wastes is disposed of according to national or international guidelines. Developing countries would work toward a 2005 deadline. By 2025, all countries would dispose of all wastes according to international quality guidelines.

Safe disposal programmes in developing countries will cost an estimated $15 billion a year, including $3.4 billion in international grants or concessional financing.

Extending waste services will require national planning, international cooperation and funding. United Nations programmes can provide a framework for this.

Billions of people lack basic sanitation services. Waste service coverage must be extended. These needs must be factored into development plans. By the year 2025, full waste services should be available in all urban areas and sanitation services should be extended to rural areas. The estimated annual cost will be $7.5 billlion, including $2.6 billion in international grants or concessional financing.

MANAGEMENT OF RADIOACTIVE WASTES

(Section II, Chapter 22 of Agenda 21)

The growing volume of radioactive wastes poses serious environmental and health dangers. Reducing this will require national management that minimizes the production of nuclear wastes and provides for their safe processing, transportation and disposal.

International cooperation should be strengthened to ensure that nuclear wastes are handled, stored and disposed of in an environmentally sound manner.

The most dangerous radioactive waste is high-level waste (generated in the nuclear fuel cycle) and spent nuclear fuel. Nuclear power stations around the world produce some 10,000 cubic metres annually. This is about 99 per cent of all radionuclides that have to be disposed of. This amount is increasing as more nuclear power plants become operational and other nuclear facilities are decommissioned.

The use of radionuclides in medical, research and industrial applications currently results in about 200,000 cubic metres annually of low- and intermediate-level waste, and the volume is growing. The risk varies; it is generally less than high-level waste but sufficient to justify stringent protection measures.

Most countries with substantive nuclear power programmes have adopted technical and administrative measures for managing nuclear wastes. Such management systems are still needed in many other countries.

Proposals in Agenda 21 call for:

- Governments to promote policies and practical measures to limit the generation of radioactive wastes and provide for safety at every stage of their use.

- Support for the efforts of the International Atomic Energy Agency (IAEA) to develop safety standards and codes of practice for the safe and environmentally sound management and disposal of radioactive wastes.

- The transfer to developing countries of the technology needed for safe storage, transportation and disposal of nuclear wastes and/or the return to the supplier of radioactive sources after their use.

- States to strengthen efforts to implement the IAEA Code of Practice for International Transboundary Movement of Radioactive Waste and review the possibility of creating a legally binding instrument.

- Governments to encourage the London Dumping Convention to complete studies on banning the disposal of low-level radioactive wastes at sea, in place of the current voluntary moratorium.

- Governments to not allow the storage or disposal of radioactive waste near the marine environment unless they determine that scientific evidence shows that this poses no unacceptable risk to people or the environment.

- Countries to not export radioactive wastes to countries that prohibit such imports and to respect regional environmental conventions that deal with radioactive wastes, including the Bamako Convention and Lomé IV Convention.

National costs to manage and dispose of radioactive waste will vary according to the technology used. International organizations will need an estimated $8 million a year.

States should assess the health and environmental impact of disposing of radioactive wastes and promote research into methods for their safe treatment, processing and disposal, including deep geological disposal.

Developing countries require assistance to enable them to safely handle wastes generated from nuclear applications.

ACTION FOR WOMEN: SUSTAINABLE AND EQUITABLE DEVELOPMENT

(Section III, Chapter 24 of Agenda 21. Note: Chapter 23 consists of a preamble to Section III which emphasizes the importance of the involvement of all social groups in achieving sustainable development.)

To guarantee the full and equal participation of women in all development activities and particularly environmental management, Agenda 21 proposes that Governments embrace a number of objectives related to women's advancement and education.

Agenda 21 proposes the following:

All countries should implement the Nairobi Forward-looking Strategies for Women which emphasize the need for women to participate in ecosystem management and control of environmental degradation.

Policies are needed to increase the proportion of women in programmes for sustainable development involving decision-making, planning, and technical and management roles. Women's bureaux and non-governmental organizations must be strengthened.

Consideration should be given to issuing, by the year 2000, a strategy for eliminating constitutional, legal, administrative, cultural, behavioural, social and economic obstacles to women's full participation in sustainable development and public life.

By 1995, there should be national, regional and international mechanisms to assess the impact of development and environment programmes on women and ensure that they participate and benefit.

Educational policies and curricula should disseminate gender-relevant knowledge and promote the enhanced value of women's roles.

Priority measures are needed to eliminate female illiteracy, assure girls' universal access to primary and secondary education, expand enrolment in schools, and provide increased post-secondary training opportunities for women in the sciences and technology.

To reduce the heavy workload of women and girls, Governments, local authorities and employers should establish affordable nurseries and kindergartens. National programmes are required to encourage men to share household tasks equally with women.

Environmentally sound technologies developed in consultation with women should be promoted and access provided to clean water, adequate sanitation facilities and efficient fuel supplies.

Health facilities — including safe and effective women-centred and -managed reproductive health care and family planning services — should be strengthened and made more accessible. Comprehensive health care should include prenatal care, and information on maternal and child health and responsible parenthood, and should provide mothers the opportunity to breast-feed their infants for at least the first four months of life.

Equal employment opportunities and equal pay for women should be supported by providing day-care facilities and parental leave. Women should have equal access to credit, land and other natural resources; rural banking systems could be established to increase women's access to credit.

Women have a crucial role to play in changing unsustainable patterns of consumption and production particularly in industrialized countries. Programmes are needed to develop consumer awareness and encourage investment in environmentally sound productive activities.

All Governments are urged to ratify all relevant conventions relating to the status of women and to transform women's rights into legal measures that ensure women's full and equal participation in development decisions. Parties to the UN Convention on the Elimination of All Forms of Discrimination Against Women should suggest amendments by the year 2000 that strengthen women's access to natural resources, technology, credit and low-cost housing, and the control of pollution in the home and workplace.

Countries should avert the rapid environmental and economic degradation in developing countries that generally affects women and children in rural areas. Major problems include drought, desertification, armed hostilities, natural disasters, toxic waste and unsuitable agro-chemical products.

Research and data collection should focus on: women's knowledge and experience in managing natural resources; the impact of structural adjustment programmes on women; the impact on women of environmental degradation; and integrating the value of "domestic" and other unpaid work by women into resource accounting.

Gender-impact analysis should be an essential component in programmes. Rural and urban training and resource centres are needed to disseminate environmentally sound technologies to women.

The capabilities of all United Nations institutions to involve women in development and environmental management should be strengthened. The Division for the Advancement of Women, the United Nations Development Fund for Women (UNIFEM), the International Research and Training Institute for the Advancement for Women (INSTRAW), and the women's programmes of the regional commissions require special attention. Where appropriate, United Nations organizations should increase the number of women in senior posts.

The estimated average annual cost (1993-2000) of activities to enhance women's participation in development and environmental management is $40 million in international grants or concessional financing.

SOCIAL PARTNERS FOR SUSTAINABLE DEVELOPMENT

(Section III, Chapters 25-32 of Agenda 21)

Broad public participation in decision-making is fundamental for sustainable development. Individuals, groups and organizations need to take part in assessing the environmental impact of decisions that may affect their communities; they should have access to all relevant information.

Agenda 21 addresses the critical need to involve major social groups in policies and activities in all of its programme areas.

Youth (Chapter 25) make up 30 per cent of the world's population and need to participate in decisions that determine their future. Development plans should ensure that young people are provided with a healthy environment, improved living standards, education and employment opportunities.

By 2000, more than 50 per cent of each country's youth should have access to secondary education or equivalent vocational training. Education should incorporate environmental awareness and sustainable development concepts. Human rights abuses against the young, particularly females, should be fought.

Governments should implement programmes to reach the environment and development goals endorsed by the 1990 World Summit for Children, especially in regard to health, nutrition, education and the alleviation of poverty.

An estimated $1.5 milllion will be needed annually (1993-2000) on grant or concessional terms for activities to involve youth in sustainable development; costs required to protect and educate children are included in estimates for other chapters of Agenda 21.

Indigenous people (Chapter 26) generally have an historical relationship with their lands and a holistic traditional scientific knowledge of natural resources and the environment. Their participation in national and international sustainable development decisions should be strengthened.

A process to empower indigenous communities should recognize their values, traditional knowledge and resource management practices, and their dependence on renewable resources and ecosystems. Their lands should be protected from environmentally unsound activities and from activities indigenous people consider to be socially and culturally inappropriate. Some communities may require greater control over their lands and self-management of their resources.

An estimated $3 million on grant or concessional terms will be needed annually (1993-2000) to implement activities in regard to indigenous people.

Non-governmental organizations (Chapter 27) play a vital role in participatory democracy and possess diverse expertise in fields important to sustainable development. The United Nations system and Governments should strengthen mechanisms to involve non-governmental organizations in decision-making.

The full participation of **local authorities** (Chapter 28) in the programmes of Agenda 21 is crucial. They oversee planning, maintain infrastructure, establish environmental regulations, assist in implementing national policies and are pivotal in mobilizing the public around sustainable development.

By 1996, most local authorities in each country should have achieved consensus with citizens, local organizations and private enterprises on "a local Agenda 21."

International secretariat services will need an estimated $1 million annually (1993-2000) to help implement activities in this regard.

Workers and trade unions (Chapter 29) have valuable experience in industrial change and an essential stake in protecting the working environment. To allow their full participation in sustainable development, Agenda 21 calls on Governments and employers to respect workers' rights to freedom of association and organization, and to promote the active participation of workers and unions in industrial strategies and policies.

Employers, workers and Governments should address safety, health and environmental issues. Workers should participate in environmental audits and impact assessments and have adequate training to protect the environment and their own safety and health.

Activities to strengthen the role of workers and trade unions will require an estimated $300 million annually (1993-2000) in international grants or concessional financing.

Business and industry (Chapter 30) are crucial to economic development and can play a major role in reducing resource use and environmental damage. Governments, business and industry (including transnational corporations) should promote more efficient and cleaner production, including increased reuse and recycling of residues and reduction of the quantity of waste discharged.

A mix of economic incentives and legal measures should be used to promote these goals. Accounting and pricing mechanisms should incorporate environmental costs.

Entrepreneurs, particularly small and medium-sized ones, can play an important role in providing employment, improving resource-use efficiency and reducing environmental risks. To encourage responsible entrepreneurship, Governments should streamline administrative procedures and in cooperation with the private sector help establish venture capital funds for sustainable development projects.

Additional costs of such efforts, mostly involving reorientation of existing activities, are not expected to be significant.

The scientific and technological community (Chapter 31) should contribute to development policies more openly and effectively. This will mean improved communication and cooperation between the community — which includes engineers, architects, industrial designers, urban planners and other professionals — and decision-makers and the public.

Cooperative networks and programmes for disseminating the results of scientific research should be strengthened. About $15 million per year (1993-2000) will be needed from international sources on grant or concessional terms for these and related activities.

Scientific and technological codes of practice and guidelines relating to sustainable development should be promoted to ensure that natural processes are properly valued. This will involve international cooperation, national advisory groups on environmental and developmental ethics and extended training in these issues. About $5 million in international grants or concessional financing will be needed for this during 1993-2000.

Farmers (Chapter 32) — the stewards of much of the Earth's resources — are central to sustainable agriculture. Farm production has increased over the past 20 years but in some regions this has been outstripped by population growth, international debt or falling commodity prices. Much of the rural population in developing countries depends on subsistence agriculture, has limited access to resources and technology, and consequently engages in overexploitation of marginal lands.

To motivate farmers to manage natural resources sustainably, Governments should: decentralize decision-making by strengthening local and village organizations; promote financial incentives (through trade policies and pricing mechanisms); and support the formation of farmers' organizations. Women should be given access to land, credit, technology and training.

Governments and international organizations should: support research to develop farming technologies that enhance crop yields, maintain land quality, recycle nutrients, conserve water and energy, and control pests; compare high- and low-input agriculture; and make optimal use of human labour and animal power.

Financing required for these activities is estimated in Chapter 14 of Agenda 21.

FINANCIAL RESOURCES AND MECHANISMS

(Section IV, Chapter 33 of Agenda 21)

Economic growth, social development and poverty eradication are overriding priorities in developing countries, and are essential to sustainability. The provision to developing counties of financial and technical resources needed to implement Agenda 21 will benefit all humanity; the long-term cost of inaction could be much greater.

Global and local environmental issues are interrelated. Special efforts are required to deal with issues like climate change and biological diversity.

Free trade and access to markets will help make economic growth and environmental protection mutually supportive for all countries.

International cooperation for sustainable development should complement the efforts of developing countries. For this, substantial new and additional financial resources, including grants or concessional financing at predictable levels, will be required.

In order to provide this, developed countries reaffirm their commitment to reach as soon as possible the United Nations target of 0.7 per cent of gross national product (GNP) annually for official development assistance (ODA); some have agreed to reach the target by the year 2000. The Commission on Sustainable Development will monitor progress towards this target. There should be equitable burden-sharing among developed countries. Other countries may contribute voluntarily.

Use should be made of all available funding sources and mechanisms, including:

- The International Development Association (IDA),[1] and regional and subregional development banks.

- The Global Environment Facility, managed jointly by the World Bank, the UN Development Programme (UNDP) and the UN Environment Programme (UNEP). The facility should be restructured to encourage universal participation. Its scope should be extended to relevant Agenda 21 programme areas with global benefits. Decision-making and operations should be transparent and democratic; there should be balanced and equitable representation of developing countries' interests, as well as due weight given to donor countries' funding efforts. Funds should be disbursed under mutually agreed criteria without introducing new conditions on lending.

- Specialized agencies, United Nations bodies and multilateral institutions designated to support Governments in implementing Agenda 21. UNDP should be supported in facilitating capacity building and technical cooperation at the country level, and should make full use of the expertise of UNEP.

- Debt relief measures for low- and middle-income developing countries, including debt swaps.

- Increased private funding and direct investment, encouraged through national policies and joint ventures.

- Innovative financing: new ways of generating funds should be explored, including fiscal incentives, tradeable permits, and reallocation of resources presently committed to military purposes.

The estimated annual costs (1993-2000) of implementing the activities in Agenda 21 in developing countries are over $600 billion, including $125 billion in international grants or concessional financing. Countries in a position to do so should report initial financial commitments at the 47th session of the General Assembly. Funding and mechanisms should be reviewed regularly.

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[1] The text of Agenda 21 directs IDA to give special consideration to the statement by World Bank President Lewis Preston at UNCED. In that statement Mr. Preston proposed that additional funds be made available to IDA — specifically that the amount given to replenish IDA funds for the 1993-1995 period (the IDA-10 replenishment) be at a level that would maintain IDA-9 funding in real terms. He also proposed that part of the World Bank's net income ($1.2 billion annually) be allocated to the IDA as an "Earth Increment" that would fund national environmental projects.

MAKING ENVIRONMENTALLY SOUND TECHNOLOGY AVAILABLE TO ALL

(Section IV, Chapter 34 of Agenda 21)

To develop sustainably, all countries need access to and the capacity to use technology that preserves resources and protects the environment.

Environmentally sound technologies are less polluting, use all resources more sustainably, recycle more of their wastes and products and handle residual wastes better than the technologies for which they substitute. They include both processes for reducing waste products and "end of pipe" treatment of pollutants.

Transfer of technology includes the exchange of knowledge, goods, services and organizational procedures. Developing countries need support to build their economic, technical and managerial capabilities. This will require a long-term joint effort by enterprises and Governments supplying and receiving technology; together with the systematic training of craftspersons, technicians, managers, scientists, engineers and educators.

Developing countries, in particular, require new and efficient technologies in order to alleviate poverty and human suffering. Better access to information on technologies, including environmental risks, is required so that Governments can make informed choices about improving or replacing unacceptable production methods.

Much technological knowledge lies in the public domain. Proprietary technology is available through commercial channels, making international business an important vehicle for technology transfer. While ways to assure access by developing countries to state-of-the-art technologies continue to be explored, enhanced access should be facilitated and financed as appropriate, while providing fair incentives to innovators.

The role of patent protection and intellectual property rights in the transfer of environmentally sound technology should be further examined. Consideration should be given to assuring developing countries access to technologies covered by proprietary rights.

Technology should be transferred on concessional and preferential terms, as mutually agreed, taking into account the need to protect intellectual property rights as well as the special needs of developing countries.

International information networks and regional clearinghouses should be developed for agriculture, industry and energy. Networks could include national and regional patent offices equipped to report on technologies, their sources, environmental risks and the broad terms under which they may be acquired.

National policies (including subsidies, taxes and regulations) should encourage the private and public sectors to become innovative, to market and use environmentally sound technologies and to remove barriers to transfer.

Proposals include: purchase of patents and licenses on commercial terms for transfer to developing countries on non-commercial terms; prevention of abuse of intellectual property rights by establishing rules for their compulsory acquisition, with fair and adequate compensation and in compliance with international conventions; provision of financial resources to enable developing countries to implement sustainable development measures that entail a special burden to them; and development of access and transfer mechanisms, taking into account the decision by the UN Conference on Trade and Development (UNCTAD) to negotiate an international code of conduct on technology transfer.

Governments should support programmes of technological cooperation and assistance and the creation of a collaborative international network of research centres on environmentally sound technology. Visits or the voluntary return to their home countries by experts from developing countries who are working in developed nations should be facilitated.

The international community should help countries exchange experiences and develop the capacity to assess their technology needs, including environmental impact and risk assessment.

The estimated annual cost (1993-2000) of the activities of this chapter is between $450 million and $600 million in international grants or concessional financing.

SCIENCE FOR SUSTAINABLE DEVELOPMENT

(Section IV, Chapter 35 of Agenda 21)

Science is essential to the search for sustainable development and should be responsive to emerging needs. Better scientific understanding of the connections between human activities and the environment and better use of that knowledge must be incorporated into the formulation of policies for development and environmental management.

More research into climate change, resource consumption rates, demographic trends and environmental degradation is needed and methods for long-term assessment of natural resources should be improved. Research capacity, especially in developing countries, should be strengthened.

Strategies for sustainable development must be based on an accurate assessment of the Earth's carrying capacity and resilience to human activity. A deeper understanding of the interconnections between water, nutrient and biogenic cycles and the energy flows of land, oceans and atmosphere is crucial. The efficiency of resource utilization should be improved and preferable alternatives should be developed such as less intensive use of energy in industry, agriculture and transportation.

Strengthening the scientific basis for sustainable management — There must be a systematic assessment of the long-term local and regional effects of global change and the integration of results into the development process. Constant re-evaluation of resource use should be made in order to reduce the environmental impact; and better communication among scientists, decision makers and the general public should be established as part of policy-making.

Greater use should be made of quality-of-life indicators and data on links between ecosystems and human health, and of economic measures, including incentives. Long-term policies should be informed by assessments of risks and available technologies.

The estimated annual cost of activities in this programme area from 1993 to 2000 is $150 million, including $30 million in international grants or concessional financing.

Enhancing scientific understanding — Knowledge of the Earth's carrying capacity and processes that impair or enhance its ability to support life should be expanded. More research is needed on natural systems. New analytical and predictive tools should be developed and applied, and the physical, economic and social sciences should be better integrated.

There should be better and more expanded monitoring of water, chemical and biological cycles; research in atmospheric chemistry and sources and sinks of greenhouse gases; coordination of satellite surveys of air, water and land and their interactions; and the development of techniques for predicting and countering the effects of environmental stresses.

Also needed are: studies of the role biodiversity and species loss play in ecosystems; parameters for managing coastal and mountain zones; expansion of water-quality monitoring systems; measures to better predict and prepare for natural disasters; and more research into the impact of human activities on environment and the responses of humans to global environmental change.

Activities in this programme will cost an estimated $2 billion a year (1993-2000), including $1.5 billion in international grants or concessional financing.

Improving long-term scientific assessment — Research results should be used to guide development paths appropriate for each region. Data collection should be coordinated to allow long-term estimates of resource depletion, energy use, health impacts and demographic trends. Regular, standardized audits of carrying capacity and vulnerable resources are needed at the national, regional and global levels.

These activities will cost an estimated $35 million per year from 1993 to 2000, including $18 million from international sources on grant or concessional terms.

Building up scientific capacity and capability — Education and training in science and technology should be expanded, including environment-related sciences. More scientists are needed in all countries to identify environmental considerations and incorporate them into research and development projects.

Developing countries need assistance to study and manage their resource bases and to improve their research and development capacity. Schools, universities and research institutions need adequate equipment and access to current literature.

National scientific databases and regional and global information networks should be expanded. Financial incentives can stimulate research and development and their use in the productive sectors of the economy. Indigenous knowledge should be compiled, analyzed and published.

Scientists from developing countries must participate fully in international research programmes so that their Governments can participate equally in environment and development negotiations. To stem the

exodus of scientists from developing nations, adequate salaries, equipment, libraries and other facilities must be made available in their home countries.

The estimated cost of this programme is $750 million per year from 1993 to 2000, of which $470 million is needed from international sources on grant or concessional terms.

PROMOTING ENVIRONMENTAL AWARENESS

(Section IV, Chapter 36 of Agenda 21)

Education is critical for promoting sustainable development and effective public participation in decision-making. Proposals in Agenda 21 focus on reorienting education towards sustainable development, increasing public awareness and promoting training.

Countries, schools and/or the appropriate international and national institutions and organizations should:

- Strive to ensure universal access to basic education.
- Achieve primary education for at least 80 per cent of girls and 80 per cent of boys of primary school-age through formal schooling or non-formal education.
- Reduce adult illiteracy rates to at least half of their 1990 levels, with particular focus on women.
- Endorse the recommendations of the World Conference on Education for All: Meeting Basic Learning Needs, held in Thailand in March 1990.
- Achieve environmental and development education from primary school-age through adulthood.
- Integrate environment and development concepts, including demography, in all education programmes, with a particular emphasis on discussing environmental problems in a local context.
- Create a national board, representative of all environmental and developmental interests, to give advice on education.
- Involve schoolchildren in local and regional studies on environmental health, including safe drinking water, sanitation, food and ecosystems.
- Encourage cross-disciplinary university courses in fields which have an impact on the environment.
- Promote adult education programmes based on local problems related to environment and development.

There is still a considerable lack of awareness regarding the interrelated nature of human activities and the environment. A global education effort is proposed to strengthen attitudes, values and actions that are environmentally sound and that support sustainable development. The effort should also promote ecological tourism, making use of national parks and protected areas.

Training is one of the most important tools to facilitate the transition to a more sustainable world. It should have a job-specific focus, aimed at filling gaps in knowledge and skills that would help individuals find employment and be involved in environment and development work.

Scientific training requires the transfer of new environmentally sound technology and know-how. Environmental technicians should be locally recruited and trained to serve communities' needs.

Governments, industry, trade unions and consumers should promote an understanding of the interrelationship between good environment and good business practices.

The estimated annual cost of Agenda 21 programmes for education, promoting environmental awareness and training is between $14.2 billion and $15.2 billion annually from 1993 to 2000. Of this, $5.6-$6.6 billion would have to come from international sources on grant or concessional terms.

BUILDING NATIONAL CAPACITY FOR SUSTAINABLE DEVELOPMENT

(Section IV, Chapter 37 of Agenda 21)

Capacity-building means developing a country's human, scientific, technological, organizational, institutional and resource capabilities. Technical cooperation for capacity-building, including technology transfer and know-how, should be driven by the individual needs and specific conditions of the recipients.

Strategies, priorities and programmes should be based on broad internal consensus and should improve countries' ability to respond to new long-term challenges rather than concentrating only on immediate problems.

Each country should complete, if possible by 1994, a review of its capacity-building needs.

The international aid process as it relates to technology transfer, know-how and other technical cooperation for sustainable development should be reviewed and evaluated by the United Nations, donor and recipient countries, and public and private organizations. The United Nations system could strengthen its activities in technical cooperation and mobilize international funding in this area.

Existing international multilateral institutions with responsibilities for environment and/or development issues should be improved and reoriented to ensure that they have the ability to integrate environment and development.

Bilateral technical aid to developing countries would cost about $15 billion annually, one fourth of total official development assistance. Implementing Agenda 21 would require more effective use of these funds, as well as additional funding in specific areas. The estimated annual cost (1993-2000) of the activities of this chapter will be $300 million - $1 billion in international grants or concessional financing.

STRENGTHENING INSTITUTIONS FOR SUSTAINABLE DEVELOPMENT

(Section IV, Chapter 38 of Agenda 21)

To accomplish the work agreed to at the Conference, existing institutions must be modified and strengthened and new institutions could be created. National capacity-building for environment and developing should be part of this effort.

Agenda 21 proposals address the role of institutions within the United Nations, post-Conference arrangements and the relationship between the UN system and other international, regional, national and non-governmental institutions, organizations and groups — including industry, business and scientific communities.

Institutional structures envisaged in Agenda 21 will be based on agreement on financial resources and mechanisms, technology transfer, the Rio Declaration on Environment and Development and substantive sections of Agenda 21.

It is proposed that the General Assembly, as the principal policy-making organ for Conference follow-up, could consider holding a special session no later than 1997 to review and appraise implementation of Agenda 21.

The Economic and Social Council (ECOSOC) would assist the General Assembly in Conference follow-up and implementation of Agenda 21 by overseeing system-wide coordination through a high-level Commission on Sustainable Development. The Commission, consisting of States elected as members with regard to equitable geographic distribution, should convene no later than 1993. The General Assembly, at its 47th session, should determine the Commission's relationship with other intergovernmental bodies concerned with the environment and development.

The Commission on Sustainable Development will provide for the involvement of United Nations organizations and international financial institutions in implementing Agenda 21 and in integrating environmental and developmental concerns. It will monitor progress in the implementation of goals and financial commitments, and make appropriate recommendations — through ECOSOC — to the General Assembly.

Implementing Agenda 21 will require close and effective cooperation and exchange of information between the United Nations system and the multilateral financial institutions. This task should be given to the Administrative Committee on Coordination, headed by the Secretary-General.

Intergovernmental bodies, the Secretary-General and the United Nations system may also benefit from the expertise of a high-level advisory board appointed by the Secretary-General, consisting of eminent persons knowledgeable about environment and development including relevant sciences.

To provide the technical and operational assistance and coordination necessary for Agenda 21's programmes, UNDP and UNEP should be strengthened. UNCTAD should also play an important role, and the United Nations Sudano-Sahelian Office should also be strengthened.

Regional and sub-regional cooperation will be an important part of the Conference outcome. States should consider the preparation of national action plans and/or coordinating bodies for the implementation of Agenda 21. Non-governmental organizations and major groups such as women are important partners and should be given opportunities to make their contributions.

INTERNATIONAL LEGAL INSTRUMENTS AND MECHANISMS

(Section IV, Chapter 39 of Agenda 21)

Agenda 21 proposals for international law on sustainable development focus on improving the legislative capabilities of developing countries, assessing the efficacy of current international agreements and setting priorities for the future.

International law on sustainable development needs to be further developed, giving special attention to the delicate balance between environmental and developmental concerns and to the special needs of developing countries.

The participation of all countries in global treaty-making is essential. Many existing international legal instruments and agreements in the field of environmental law have been developed without the adequate participation and contribution of developing countries.

Developing countries should be provided with technical and financial assistance to enhance their ability to participate in national and international negotiations and to implement and monitor national and international agreements relating to sustainable development.

International standards for environmental protection should be promoted gradually, taking into account the different situations and abilities of countries. Policies should address the root causes of environmental degradation, and should not unnecessarily restrict international trade. Measures to address international environmental problems should, as far as possible, be based on consensus; unilateral actions should be avoided. Any necessary trade measures should be non-discriminatory, give adequate notification of national regulations, and give consideration to the special requirements of developing countries.

States should consider broadening and strengthening international mechanisms for identification, avoidance and settlement of disputes in the field of sustainable development.

Measures should be considered to address, in times of war, large-scale destruction of the environment that cannot be justified under international law. The General Assembly and its Sixth Committee are the appropriate forums to deal with this subject, taking into account the role of the International Committee of the Red Cross.

To ensure safe and environmentally sound nuclear power, efforts should be made to conclude negotiations for a nuclear safety convention in the framework of the International Atomic Energy Agency.

BRIDGING THE DATA GAP

(Section IV, Chapter 40 of Agenda 21)

In sustainable development, the need for information arises at all levels, from that of senior national and international decision-makers to the grass-roots and individual levels.

The gap in the availability, quality, coherence, standardization and accessibility of data between the developed and the developing world has been increasing. This has seriously impaired the capacities of countries to make informed decisions concerning environment and development.

There is also a need for better collection and assessment of data and for improved coordination among environmental, social, demographic and developmental data, and information activities.

Commonly used indicators such as gross national product (GNP) and measurements of individual resource or pollution flows do not provide adequate indications of sustainability.

Proposals for bridging this data gap include:

- Creating indicators for sustainable development to provide solid bases for decision-making at all levels. These should be used in satellite accounts and eventually in national accounts. The Statistical Office of the United Nations can be helpful in this.

- Improving data collection and analysis. Countries and organizations should carry out inventories of environmental, resource and developmental data. They should make use of new techniques of data collection, such as satellite-based remote sensing.

- Making the necessary institutional changes at the national level so that Governments can integrate environment and development information.

- Strengthening programmes such as the Global Environmental Monitoring Systems (GEMS) and the Global Resource Information Database (GRID) and other systems in the UN's Earthwatch programme. A United Nations "Development Watch" programme might be considered.

- Developing guidelines and mechanisms for the rapid and continuous transfer of data-collection and information technologies to developing countries, and for related training.

Agenda 21 contains proposals for improving information availability. There is a wealth of data and information that could be used for sustainable development. Such information is not adequately managed because of lack of personnel, funding, technology and often the awareness that the information is valuable. Extensive capacity-building is required.

International grants and concessional financing needed to improve the collection, analysis and dissemination of data is estimated at $2.1 billion per year from 1993 to 2000.

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EARTH SUMMIT

RIO DECLARATION
&
FOREST PRINCIPLES

United Nations
Conference on
Environment and
Development

Rio de Janeiro
Brazil
3-14 June 1992

FINAL TEXT

UNITED NATIONS

INTRODUCTION

RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT

In 1972, the United Nations Conference on the Human Environment adopted a set of principles for the ecologically sound management of the environment. This "Stockholm Declaration" placed environmental issues on the international agenda and saw the beginning of a dialogue between industrialized and developing countries concerning the link between economic growth, pollution of the global commons (air, water, oceans) and the well-being of peoples throughout the world.

In June 1992 at Rio de Janeiro, Brazil, the United Nations Conference on Environment and Development — known as the Earth Summit — adopted a declaration which extended the idea of rights and responsibilities of countries toward the environment. The Rio Declaration on Environment and Development reflects two major concerns that have emerged in the twenty years between these meetings: the deterioration of the environment and its ability to sustain life, and the deepening awareness that long-term economic progress and the need for environmental protection must be seen as mutually interdependent.

At the start of the negotiation process for the Earth Summit, Maurice Strong, the Conference Secretary-General, envisioned an Earth Charter — a statement of fundamental principles for sustainable development on Earth. The resulting Rio Declaration emerged as a compromise between industrialized and developing nations. Originally, the former favoured a brief statement reaffirming the Stockholm Declaration and emphasizing the need to protect the planet. Developing countries required more detailed references to their specific concerns, especially their sovereign right to development, acknowledgment that industrialized countries were primarily responsible for current environmental problems, and the need for new financing and technology to enable developing countries to avoid taking the same polluting route to development as did the developing countries.

The Rio Declaration is not legally binding. However, it is anticipated that, as with the UN's declarations on human rights, Governments will have a strong moral commitment to adhere to its principles.

FOREST PRINCIPLES

At the start of preparations for the Earth Summit, it was hoped that a legally binding convention on forestry could be negotiated and ready for signing, together with agreements on climate change and biodiversity, at the Conference. Consultations on a possible international legal agreement on the sustainable management of forests had already been initiated by the Food and Agriculture Organization of the United Nations (FAO).

In the early stages of negotiations, the industrialized countries called for an agreement that would ban the cutting of tropical rainforests, where much of the world's present deforestation is occurring. Developing countries, led by Malaysia, sought to extend any agreement to include consideration of forests in temperate and boreal latitudes, such as those found in the United States, Canada and the former Soviet Union, where much of the land once forested has been cleared and where deforestation is taking place at a slower pace than in the tropics.

The work involved in bridging this broad disagreement could not be accomplished in time for Rio. The negotiations produced a set of principles for the sustainable management of global forests which could form the basis for post-Summit negotiations on an international legal agreement on forestry. These principles were finalized and adopted at the Earth Summit.

RIO DECLARATION
ON ENVIRONMENT AND DEVELOPMENT

The United Nations Conference on Environment and Development,

Having met at Rio de Janeiro from 3 to 14 June 1992,

Reaffirming the Declaration of the United Nations Conference on the Human Environment, adopted at Stockholm on 16 June 1972, and seeking to build upon it,

With the goal of establishing a new and equitable global partnership through the creation of new levels of cooperation among States, key sectors of societies and people,

Working towards international agreements which respect the interests of all and protect the integrity of the global environmental and developmental system,

Recognizing the integral and interdependent nature of the Earth, our home,

Proclaims that:

PRINCIPLE 1

Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

PRINCIPLE 2

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

PRINCIPLE 3

The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

PRINCIPLE 4

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

PRINCIPLE 5

All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world.

PRINCIPLE 6

The special situation and needs of developing countries, particularly the least developed and those most environmentally vulnerable, shall be given special priority. International actions in the field of environment and development should also address the interests and needs of all countries.

PRINCIPLE 7

States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

PRINCIPLE 8

To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.

PRINCIPLE 9

States should cooperate to strengthen endogenous capacity-building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

PRINCIPLE 10

Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

PRINCIPLE 11

States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply. Standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries.

PRINCIPLE 12

States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation. Trade policy measures for environmental purposes should not constitute a

means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus.

PRINCIPLE 13

States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.

PRINCIPLE 14

States should effectively cooperate to discourage or prevent the relocation and transfer to other States of any activities and substances that cause severe environmental degradation or are found to be harmful to human health.

PRINCIPLE 15

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

PRINCIPLE 16

National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

PRINCIPLE 17

Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

PRINCIPLE 18

States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to help States so afflicted.

PRINCIPLE 19

States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.

PRINCIPLE 20

Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development.

PRINCIPLE 21

The creativity, ideals and courage of the youth of the world should be mobilized to forge a global partnership in order to achieve sustainable development and ensure a better future for all.

PRINCIPLE 22

Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

PRINCIPLE 23

The environment and natural resources of people under oppression, domination and occupation shall be protected.

PRINCIPLE 24

Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.

PRINCIPLE 25

Peace, development and environmental protection are interdependent and indivisible.

PRINCIPLE 26

States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations.

PRINCIPLE 27

States and people shall cooperate in good faith and in a spirit of partnership in the fulfilment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development.

* * *

NON-LEGALLY BINDING AUTHORITATIVE STATEMENT OF PRINCIPLES FOR A GLOBAL CONSENSUS ON THE MANAGEMENT, CONSERVATION AND SUSTAINABLE DEVELOPMENT OF ALL TYPES OF FORESTS

PREAMBLE

(a) The subject of forests is related to the entire range of environmental and development issues and opportunities, including the right to socio-economic development on a sustainable basis.

(b) The guiding objective of these principles is to contribute to the management, conservation and sustainable development of forests and to provide for their multiple and complementary functions and uses.

(c) Forestry issues and opportunities should be examined in a holistic and balanced manner within the overall context of environment and development, taking into consideration the multiple functions and uses of forests, including traditional uses, and the likely economic and social stress when these uses are constrained or restricted, as well as the potential for development that sustainable forest management can offer.

(d) These principles reflect a first global consensus on forests. In committing themselves to the prompt implementation of these principles, countries also decide to keep them under assessment for their adequacy with regard to further international cooperation on forest issues.

(e) These principles should apply to all types of forests, both natural and planted, in all geographical regions and climatic zones, including austral, boreal, subtemperate, temperate, subtropical and tropical.

(f) All types of forests embody complex and unique ecological processes which are the basis for their present and potential capacity to provide resources to satisfy human needs as well as environmental values, and as such their sound management and conservation is of concern to the Governments of the countries to which they belong and are of value to local communities and to the environment as a whole.

(g) Forests are essential to economic development and the maintenance of all forms of life.

(h) Recognizing that the responsibility for forest management, conservation and sustainable development is in many States allocated among federal/national, state/provincial and local levels of government, each State, in accordance with its constitution and/or national legislation, should pursue these principles at the appropriate level of government.

PRINCIPLES/ELEMENTS

1. (a) States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies and have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

(b) The agreed full incremental cost of achieving benefits associated with forest conservation and sustainable development requires increased international cooperation and should be equitably shared by the international community.

2. (a) States have the sovereign and inalienable right to utilize, manage and develop their forests in accordance with their development needs and level of socio-economic development and on the basis of national policies consistent with sustainable development and legislation, including the conversion of such areas for other uses within the overall socio-economic development plan and based on rational land-use policies.

(b) Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations. These needs are for forest products and services, such as wood and wood products, water, food, fodder, medicine, fuel, shelter, employment, recreation, habitats for wildlife, landscape diversity, carbon sinks and reservoirs, and for other forest products. Appropriate measures should be taken to protect forests against harmful effects of pollution, including air-borne pollution, fires, pests and diseases, in order to maintain their full multiple value.

(c) The provision of timely, reliable and accurate information on forests and forest ecosystems is essential for public understanding and informed decision-making and should be ensured.

(d) Governments should promote and provide opportunities for the participation of interested parties, including local communities and indigenous people, industries, labour, non-governmental organizations and individuals, forest dwellers and women, in the development, implementation and planning of national forest policies.

3. (a) National policies and strategies should provide a framework for increased efforts, including the development and strengthening of institutions and programmes for the management, conservation and sustainable development of forests and forest lands.

(b) International institutional arrangements, building on those organizations and mechanisms already in existence, as appropriate, should facilitate international cooperation in the field of forests.

(c) All aspects of environmental protection and social and economic development as they relate to forests and forest lands should be integrated and comprehensive.

4. The vital role of all types of forests in maintaining the ecological processes and balance at the local, national, regional and global levels through, *inter alia*, their role in protecting fragile ecosystems, watersheds and freshwater resources and as rich storehouses of biodiversity and biological resources and sources of genetic material for biotechnology products, as well as photosynthesis, should be recognized.

5. (a) National forest policies should recognize and duly support the identity, culture and the rights of indigenous people, their communities and other communities and forest dwellers. Appropriate conditions should be promoted for these groups to enable them to have an economic stake in forest use, perform economic activities, and achieve and maintain cultural identity and social organization, as well as adequate levels of livelihood and well-being, through, *inter alia*, those land tenure arrangements which serve as incentives for the sustainable management of forests.

(b) The full participation of women in all aspects of the management, conservation and sustainable development of forests should be actively promoted.

6. (a) All types of forests play an important role in meeting energy requirements through the provision of a renewable source of bio-energy, particularly in developing countries, and the demands for fuelwood for household and industrial needs should be met through sustainable forest management, afforestation and reforestation. To this end, the potential contribution of plantations of both indigenous and introduced species for the provision of both fuel and industrial wood should be recognized.

(b) National policies and programmes should take into account the relationship, where it exists, between the conservation, management and sustainable development of forests and all aspects related to the production, consumption, recycling and/or final disposal of forest products.

(c) Decisions taken on the management, conservation and sustainable development of forest resources should benefit, to the extent practicable, from a comprehensive assessment of economic and non-economic values of forest goods and services and of the environmental costs and benefits. The development and improvement of methodologies for such evaluations should be promoted.

(d) The role of planted forests and permanent agricultural crops as sustainable and environmentally sound sources of renewable energy and industrial raw material should be recognized, enhanced and promoted. Their contribution to the maintenance of ecological processes, to offsetting pressure on primary/old-growth forest and to providing regional employment and development with the adequate involvement of local inhabitants should be recognized and enhanced.

(e) Natural forests also constitute a source of goods and services, and their conservation, sustainable management and use should be promoted.

7. (a) Efforts should be made to promote a supportive international economic climate conducive to sustained and environmentally sound development of forests in all countries, which include, *inter alia*, the promotion of sustainable patterns of production and consumption, the eradication of poverty and the promotion of food security.

(b) Specific financial resources should be provided to developing countries with significant forest areas which establish programmes for the conservation of forests including protected natural forest areas. These resources should be directed notably to economic sectors which would stimulate economic and social substitution activities.

8. (a) Efforts should be undertaken towards the greening of the world. All countries, notably developed countries, should take positive and transparent action towards reforestation, afforestation and forest conservation, as appropriate.

(b) Efforts to maintain and increase forest cover and forest productivity should be undertaken in ecologically, economically and socially sound ways through the rehabilitation, reforestation and re-establishment of trees and forests on unproductive, degraded and deforested lands, as well as through the management of existing forest resources.

(c) The implementation of national policies and programmes aimed at forest management, conservation and sustainable development, particularly in developing countries, should be supported by international financial and technical cooperation, including through the private sector, where appropriate.

(d) Sustainable forest management and use should be carried out in accordance with national development policies and priorities and on the basis of environmentally sound national guidelines. In the formulation of such guidelines, account should be taken, as appropriate and if applicable, of relevant internationally agreed methodologies and criteria.

(e) Forest management should be integrated with management of adjacent areas so as to maintain ecological balance and sustainable productivity.

(f) National policies and/or legislation aimed at management, conservation and sustainable development of forests should include the protection of ecologically viable representative or unique examples of forests, including primary/old-growth forests, cultural, spiritual, historical, religious and other unique and valued forests of national importance.

(g) Access to biological resources, including genetic material, shall be with due regard to the sovereign rights of the countries where the forests are located and to the sharing on mutually agreed terms of technology and profits from biotechnology products that are derived from these resources.

(h) National policies should ensure that environmental impact assessments should be carried out where actions are likely to have significant adverse impacts on important forest resources, and where such actions are subject to a decision of a competent national authority.

9. (a) The efforts of developing countries to strengthen the management, conservation and sustainable development of their forest resources should be supported by the international community, taking into account the importance of redressing external indebtedness, particularly where aggravated by the net transfer of resources to developed countries, as well as the problem of achieving at least the

replacement value of forests through improved market access for forest products, especially processed products. In this respect, special attention should also be given to the countries undergoing the process of transition to market economies.

(b) The problems that hinder efforts to attain the conservation and sustainable use of forest resources and that stem from the lack of alternative options available to local communities, in particular the urban poor and poor rural populations who are economically and socially dependent on forests and forest resources, should be addressed by Governments and the international community.

(c) National policy formulation with respect to all types of forests should take account of the pressures and demands imposed on forest ecosystems and resources from influencing factors outside the forest sector, and intersectoral means of dealing with these pressures and demands should be sought.

10. New and additional financial resources should be provided to developing countries to enable them to sustainably manage, conserve and develop their forest resources, including through afforestation, reforestation and combating deforestation and forest and land degradation.

11. In order to enable, in particular, developing countries to enhance their endogenous capacity and to better manage, conserve and develop their forest resources, the access to and transfer of environmentally sound technologies and corresponding know-how on favourable terms, including on concessional and preferential terms, as mutually agreed, in accordance with the relevant provisions of Agenda 21, should be promoted, facilitated and financed, as appropriate.

12. (a) Scientific research, forest inventories and assessments carried out by national institutions which take into account, where relevant, biological, physical, social and economic variables, as well as technological development and its application in the field of sustainable forest management, conservation and development, should be strengthened through effective modalities, including international cooperation. In this context, attention should also be given to research and development of sustainably harvested non-wood products.

(b) National and, where appropriate, regional and international institutional capabilities in education, training, science, technology, economics, anthropology and social aspects of forests and forest management are essential to the conservation and sustainable development of forests and should be strengthened.

(c) International exchange of information on the results of forest and forest management research and development should be enhanced and broadened, as appropriate, making full use of education and training institutions, including those in the private sector.

(d) Appropriate indigenous capacity and local knowledge regarding the conservation and sustainable development of forests should, through institutional and financial support and in collaboration with the people in the local communities concerned, be recognized, respected, recorded, developed and,

as appropriate, introduced in the implementation of programmes. Benefits arising from the utilization of indigenous knowledge should therefore be equitably shared with such people.

13. (a) Trade in forest products should be based on non-discriminatory and multilaterally agreed rules and procedures consistent with international trade law and practices. In this context, open and free international trade in forest products should be facilitated.

(b) Reduction or removal of tariff barriers and impediments to the provision of better market access and better prices for higher value-added forest products and their local processing should be encouraged to enable producer countries to better conserve and manage their renewable forest resources.

(c) Incorporation of environmental costs and benefits into market forces and mechanisms, in order to achieve forest conservation and sustainable development, should be encouraged both domestically and internationally.

(d) Forest conservation and sustainable development policies should be integrated with economic, trade and other relevant policies.

(e) Fiscal, trade, industrial, transportation and other policies and practices that may lead to forest degradation should be avoided. Adequate policies, aimed at management, conservation and sustainable development of forests, including, where appropriate, incentives, should be encouraged.

14. Unilateral measures, incompatible with international obligations or agreements, to restrict and/or ban international trade in timber or other forest products should be removed or avoided, in order to attain long-term sustainable forest management.

15. Pollutants, particularly air-borne pollutants, including those responsible for acidic deposition, that are harmful to the health of forest ecosystems at the local, national, regional and global levels should be controlled.

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EARTH SUMMIT

CONVENTION ON CLIMATE CHANGE

United Nations
Conference on
Environment and
Development

Rio de Janeiro
Brazil
3-14 June 1992

FINAL TEXT

UNITED NATIONS

INTRODUCTION

After negotiations which spanned 15 months, the UN Framework Convention on Climate Change was finalized in May 1992. It was opened for signature at the UN Conference on Environment and Development — the Earth Summit — in Rio de Janeiro, Brazil, on 4 June 1992.

As of mid-October 1992, 158 countries had signed the Convention, including the European Community. In order for the Convention to become law, it must be ratified by national legislatures of 50 countries, a process that may take two years.

The aim of this agreement is to stabilize atmospheric concentrations of greenhouse gases at levels that will prevent human activities from interfering dangerously with the global climate system. In signing the Convention, Governments agree to reduce emissions of the warming greenhouse gases to "earlier" levels by the end of the decade. States are required to report periodically on their level of emissions and efforts to slow climate change. The target of reducing carbon dioxide emissions to 1990 levels by the end of the decade — advocated by the European Community, Japan and most other countries but opposed by the United States — is stated as a goal to be met voluntarily.

To enable developing countries to meet their obligations under the Convention, developed countries agree to provide "new and additional" financial assistance. Such assistance is, for the time being, to be channeled through the Global Environment Facility, a fund administered jointly by the World Bank, the UN Development Programme and the UN Environment Programme (UNEP).

BACKGROUND

The groundwork for the Framework Convention began in 1988 when the United Nations General Assembly adopted resolution 43/53 recognizing climate change as a common concern of humanity. That year, UNEP and the UN World Meteorological Organization (WMO) established the Intergovernmental Panel on Climate Change (IPCC) to investigate the potential severity and impact of global climate change and to suggest possible policy responses. The IPCC's First Assessment Report was published in August 1990 and discussed at the second World Climate Conference later that year.

The report noted, among other things, that the 1989 session of the UN General Assembly had agreed that existing legal instruments and institutions dealing with climate change were insufficient and that a framework convention on climate change was needed. As a "framework", the Convention would outline a set of general principles and obligations in various areas. Subsequent negotiations would produce specific targets and quantitative reductions that would be added as protocols to the framework convention.

In December 1990, the General Assembly set up the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC), to be supported by UNEP and WMO. Negotiations began in February 1991 and ran parallel to the work of the Committee preparing for the Earth Summit in the hope that a convention would be ready for signing by Governments in Brazil.

UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

The Parties to this Convention,

Acknowledging that change in the Earth's climate and its adverse effects are a common concern of humankind,

Concerned that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, that these increases enhance the natural greenhouse effect, and that this will result on average in an additional warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems and humankind,

Noting that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs,

Aware of the role and importance in terrestrial and marine ecosystems of sinks and reservoirs of greenhouse gases,

Noting that there are many uncertainties in predictions of climate change, particularly with regard to the timing, magnitude and regional patterns thereof,

Acknowledging that the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions,

Recalling the pertinent provisions of the Declaration of the United Nations Conference on the Human Environment, adopted at Stockholm on 16 June 1972,

Recalling also that States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction,

Reaffirming the principle of sovereignty of States in international cooperation to address climate change,

Recognizing that States should enact effective environmental legislation, that environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply, and that standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries,

Recalling the provisions of General Assembly resolution 44/228 of 22 December 1989 on the United Nations Conference on Environment and Development, and resolutions 43/53 of 6 December 1988, 44/207 of 22 December 1989, 45/212 of 21 December 1990 and 46/169 of 19 December 1991 on protection of global climate for present and future generations of mankind,

Recalling also the provisions of General Assembly resolution 44/206 of 22 December 1989 on the possible adverse effects of sea level rise on islands and coastal areas, particularly low-lying coastal areas and the pertinent provisions of General Assembly resolution 44/172 of 19 December 1989 on the implementation of the Plan of Action to Combat Desertification,

Recalling further the Vienna Convention for the Protection of the Ozone Layer, 1985, and the Montreal Protocol on Substances that Deplete the Ozone Layer, 1987, as adjusted and amended on 29 June 1990,

Noting the Ministerial Declaration of the Second World Climate Conference adopted on 7 November 1990,

Conscious of the valuable analytical work being conducted by many States on climate change and of the important contributions of the World Meteorological Organization, the United Nations Environment Programme and other organs, organizations and bodies of the United Nations system, as well as other international and intergovernmental bodies, to the exchange of results of scientific research and the coordination of research,

Recognizing that steps required to understand and address climate change will be environmentally, socially and economically most effective if they are based on relevant scientific, technical and economic considerations and continually re-evaluated in the light of new findings in these areas,

Recognizing that various actions to address climate change can be justified economically in their own right and can also help in solving other environmental problems,

Recognizing also the need for developed countries to take immediate action in a flexible manner on the basis of clear priorities, as a first step towards comprehensive response strategies at the global, national and, where agreed, regional levels that take into account all greenhouse gases, with due consideration of their relative contributions to the enhancement of the greenhouse effect,

Recognizing further that low-lying and other small island countries, countries with low-lying coastal, arid and semi-arid areas or areas liable to floods, drought and desertification, and developing countries with fragile mountainous ecosystems are particularly vulnerable to the adverse effects of climate change,

Recognizing the special difficulties of those countries, especially developing countries, whose economies are particularly dependent on fossil fuel production, use and exportation, as a consequence of action taken on limiting greenhouse gas emissions,

Affirming that responses to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty,

Recognizing that all countries, especially developing countries, need access to resources required to achieve sustainable social and economic development and that, in order for developing countries to progress towards that goal, their energy consumption will need to grow taking into account the possibilities for achieving greater energy efficiency and for controlling greenhouse gas emissions in general, including through the application of new technologies on terms which make such an application economically and socially beneficial,

Determined to protect the climate system for present and future generations,

Have agreed as follows:

Article 1. Definitions*

For the purposes of this Convention:

1. "Adverse effects of climate change" means changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare.

2. "Climate change" means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

3. "Climate system" means the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions.

4. "Emissions" means the release of greenhouse gases and/or their precursors into the atmosphere over a specified area and period of time.

5. "Greenhouse gases" means those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation.

6. "Regional economic integration organization" means an organization constituted by sovereign States of a given region which has competence in respect of matters governed by this Convention or its protocols and has been duly authorized, in accordance with its internal procedures, to sign, ratify, accept, approve or accede to the instruments concerned.

7. "Reservoir" means a component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored.

8. "Sink" means any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere.

9. "Source" means any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere.

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* Titles of articles are included solely to assist the reader.

Article 2. Objective

The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

Article 3. Principles

In their actions to achieve the objective of the Convention and to implement its provisions, the Parties shall be guided, *inter alia*, by the following:

1. The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.

2. The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration.

3. The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties.

4. The Parties have a right to, and should, promote sustainable development. Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change.

5. The Parties should cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties, particularly developing country Parties, thus enabling them better to address the problems of climate change. Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.

Article 4. Commitments

1. All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall:

(a) Develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties;

(b) Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change;

(c) Promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors;

(d) Promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems;

(e) Cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods;

(f) Take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change;

(g) Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies;

(h) Promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies;

(i) Promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non-governmental organizations; and

(j) Communicate to the Conference of the Parties information related to implementation, in accordance with Article 12.

2. The developed country Parties and other Parties included in annex I commit themselves specifically as provided for in the following:

(a) Each of these Parties shall adopt national 1/ policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of the Convention, recognizing that the return by the end of the present decade to earlier levels of anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol would contribute to such modification, and taking into account the differences in these Parties' starting points and approaches, economic structures and resource bases, the need to maintain strong and sustainable economic growth, available technologies and other individual circumstances, as well as the need for equitable and appropriate contributions by each of these Parties to the global effort regarding that objective. These Parties may implement such policies and measures jointly with other Parties and may assist other Parties in contributing to the achievement of the objective of the Convention and, in particular, that of this subparagraph;

(b) In order to promote progress to this end, each of these Parties shall communicate, within six months of the entry into force of the Convention for it and periodically thereafter, and in accordance with Article 12, detailed information on its policies and measures referred to in subparagraph (a) above, as well as on its resulting projected anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol for the period referred to in subparagraph (a), with the aim of returning individually or jointly to their 1990 levels these anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol. This information will be reviewed by the Conference of the Parties, at its first session and periodically thereafter, in accordance with Article 7;

(c) Calculations of emissions by sources and removals by sinks of greenhouse gases for the purposes of subparagraph (b) above should take into account the best available scientific knowledge, including of the effective capacity of sinks and the respective contributions of such gases to climate change. The Conference of the Parties shall consider and agree on methodologies for these calculations at its first session and review them regularly thereafter;

(d) The Conference of the Parties shall, at its first session, review the adequacy of subparagraphs (a) and (b) above. Such review shall be carried out in the light of the best available scientific information and assessment on climate change and its impacts, as well as relevant technical, social and economic information. Based on this review, the Conference of the Parties shall take appropriate action, which may include the adoption of amendments to the commitments in subparagraphs (a) and (b) above. The Conference of the Parties, at its first session, shall also take decisions regarding criteria for joint implementation as indicated in subparagraph (a) above. A second review of subparagraphs (a) and (b) shall take place not later than 31 December 1998, and thereafter at regular intervals determined by the Conference of the Parties, until the objective of the Convention is met;

1/ This includes policies and measures adopted by regional economic integration organizations.

(e) Each of these Parties shall:

(i) coordinate as appropriate with other such Parties, relevant economic and administrative instruments developed to achieve the objective of the Convention; and

(ii) identify and periodically review its own policies and practices which encourage activities that lead to greater levels of anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol than would otherwise occur;

(f) The Conference of the Parties shall review, not later than 31 December 1998, available information with a view to taking decisions regarding such amendments to the lists in annexes I and II as may be appropriate, with the approval of the Party concerned;

(g) Any Party not included in annex I may, in its instrument of ratification, acceptance, approval or accession, or at any time thereafter, notify the Depositary that it intends to be bound by subparagraphs (a) and (b) above. The Depositary shall inform the other signatories and Parties of any such notification.

3. The developed country Parties and other developed Parties included in annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1. They shall also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing measures that are covered by paragraph 1 of this Article and that are agreed between a developing country Party and the international entity or entities referred to in Article 11, in accordance with that Article. The implementation of these commitments shall take into account the need for adequacy and predictability in the flow of funds and the importance of appropriate burden sharing among the developed country Parties.

4. The developed country Parties and other developed Parties included in annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.

5. The developed country Parties and other developed Parties included in annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies.

6. In the implementation of their commitments under paragraph 2 above, a certain degree of flexibility shall be allowed by the Conference of the Parties to the Parties included in annex I undergoing the process of transition to a market economy, in order to enhance the ability of these Parties to address climate change, including with regard to the historical level of anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol chosen as a reference.

7. The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take

fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.

8. In the implementation of the commitments in this Article, the Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impact of the implementation of response measures, especially on:

(a) Small island countries;

(b) Countries with low-lying coastal areas;

(c) Countries with arid and semi-arid areas, forested areas and areas liable to forest decay;

(d) Countries with areas prone to natural disasters;

(e) Countries with areas liable to drought and desertification;

(f) Countries with areas of high urban atmospheric pollution;

(g) Countries with areas with fragile ecosystems, including mountainous ecosystems;

(h) Countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products; and

(i) Land-locked and transit countries.

Further, the Conference of the Parties may take actions, as appropriate, with respect to this paragraph.

9. The Parties shall take full account of the specific needs and special situations of the least developed countries in their actions with regard to funding and transfer of technology.

10. The Parties shall, in accordance with Article 10, take into consideration in the implementation of the commitments of the Convention the situation of Parties, particularly developing country Parties, with economies that are vulnerable to the adverse effects of the implementation of measures to respond to climate change. This applies notably to Parties with economies that are highly dependent on income generated from the production, processing and export, and/or consumption of fossil fuels and associated energy-intensive products and/or the use of fossil fuels for which such Parties have serious difficulties in switching to alternatives.

Article 5. Research and Systematic Observation

In carrying out their commitments under Article 4, paragraph 1(g), the Parties shall:

(a) Support and further develop, as appropriate, international and intergovernmental programmes and networks or organizations aimed at defining, conducting, assessing and financing research, data collection and systematic observation, taking into account the need to minimize duplication of effort;

(b) Support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries, and to promote access to, and the exchange of, data and analyses thereof obtained from areas beyond national jurisdiction; and

(c) Take into account the particular concerns and needs of developing countries and cooperate in improving their endogenous capacities and capabilities to participate in the efforts referred to in subparagraphs (a) and (b) above.

Article 6. Education, Training and Public Awareness

In carrying out their commitments under Article 4, paragraph 1(i), the Parties shall:

(a) Promote and facilitate at the national and, as appropriate, subregional and regional levels, and in accordance with national laws and regulations, and within their respective capacities:

(i) the development and implementation of educational and public awareness programmes on climate change and its effects;

(ii) public access to information on climate change and its effects;

(iii) public participation in addressing climate change and its effects and developing adequate responses; and

(iv) training of scientific, technical and managerial personnel.

(b) Cooperate in and promote, at the international level, and, where appropriate, using existing bodies:

(i) the development and exchange of educational and public awareness material on climate change and its effects; and

(ii) the development and implementation of education and training programmes, including the strengthening of national institutions and the exchange or secondment of personnel to train experts in this field, in particular for developing countries.

Article 7. Conference of the Parties

1. A Conference of the Parties is hereby established.

2. The Conference of the Parties, as the supreme body of this Convention, shall keep under regular review the implementation of the Convention and any related legal instruments that the Conference of the Parties may adopt, and shall make, within its mandate, the decisions necessary to promote the effective implementation of the Convention. To this end, it shall:

(a) Periodically examine the obligations of the Parties and the institutional arrangements under the Convention, in the light of the objective of the Convention, the experience gained in its implementation and the evolution of scientific and technological knowledge;

(b) Promote and facilitate the exchange of information on measures adopted by the Parties to address climate change and its effects, taking into account the differing circumstances, responsibilities and capabilities of the Parties and their respective commitments under the Convention;

(c) Facilitate, at the request of two or more Parties, the coordination of measures adopted by them to address climate change and its effects, taking into account the differing circumstances, responsibilities and capabilities of the Parties and their respective commitments under the Convention;

(d) Promote and guide, in accordance with the objective and provisions of the Convention, the development and periodic refinement of comparable methodologies, to be agreed on by the Conference of the Parties, *inter alia*, for preparing inventories of greenhouse gas emissions by sources and removals by sinks, and for evaluating the effectiveness of measures to limit the emissions and enhance the removals of these gases;

(e) Assess, on the basis of all information made available to it in accordance with the provisions of the Convention, the implementation of the Convention by the Parties, the overall effects of the measures taken pursuant to the Convention, in particular environmental, economic and social effects as well as their cumulative impacts and the extent to which progress towards the objective of the Convention is being achieved;

(f) Consider and adopt regular reports on the implementation of the Convention and ensure their publication;

(g) Make recommendations on any matters necessary for the implementation of the Convention;

(h) Seek to mobilize financial resources in accordance with Article 4, paragraphs 3, 4 and 5, and Article 11;

(i) Establish such subsidiary bodies as are deemed necessary for the implementation of the Convention;

(j) Review reports submitted by its subsidiary bodies and provide guidance to them;

(k) Agree upon and adopt, by consensus, rules of procedure and financial rules for itself and for any subsidiary bodies;

(l) Seek and utilize, where appropriate, the services and cooperation of, and information provided by, competent international organizations and intergovernmental and non-governmental bodies; and

(m) Exercise such other functions as are required for the achievement of the objective of the Convention as well as all other functions assigned to it under the Convention.

3. The Conference of the Parties shall, at its first session, adopt its own rules of procedure as well as those of the subsidiary bodies established by the Convention, which shall include decision-making

procedures for matters not already covered by decision-making procedures stipulated in the Convention. Such procedures may include specified majorities required for the adoption of particular decisions.

4. The first session of the Conference of the Parties shall be convened by the interim secretariat referred to in Article 21 and shall take place not later than one year after the date of entry into force of the Convention. Thereafter, ordinary sessions of the Conference of the Parties shall be held every year unless otherwise decided by the Conference of the Parties.

5. Extraordinary sessions of the Conference of the Parties shall be held at such other times as may be deemed necessary by the Conference, or at the written request of any Party, provided that, within six months of the request being communicated to the Parties by the secretariat, it is supported by at least one-third of the Parties.

6. The United Nations, its specialized agencies and the International Atomic Energy Agency, as well as any State member thereof or observers thereto not Party to the Convention, may be represented at sessions of the Conference of the Parties as observers. Any body or agency, whether national or international, governmental or non-governmental, which is qualified in matters covered by the Convention, and which has informed the secretariat of its wish to be represented at a session of the Conference of the Parties as an observer, may be so admitted unless at least one-third of the Parties present object. The admission and participation of observers shall be subject to the rules of procedure adopted by the Conference of the Parties.

Article 8. Secretariat

1. A secretariat is hereby established.

2. The functions of the secretariat shall be:

(a) To make arrangements for sessions of the Conference of the Parties and its subsidiary bodies established under the Convention and to provide them with services as required;

(b) To compile and transmit reports submitted to it;

(c) To facilitate assistance to the Parties, particularly developing country Parties, on request, in the compilation and communication of information required in accordance with the provisions of the Convention;

(d) To prepare reports on its activities and present them to the Conference of the Parties;

(e) To ensure the necessary coordination with the secretariats of other relevant international bodies;

(f) To enter, under the overall guidance of the Conference of the Parties, into such administrative and contractual arrangements as may be required for the effective discharge of its functions; and

(g) To perform the other secretariat functions specified in the Convention and in any of its protocols and such other functions as may be determined by the Conference of the Parties.

3. The Conference of the Parties, at its first session, shall designate a permanent secretariat and make arrangements for its functioning.

Article 9. Subsidiary Body for Scientific and Technological Advice

1. A subsidiary body for scientific and technological advice is hereby established to provide the Conference of the Parties and, as appropriate, its other subsidiary bodies with timely information and advice on scientific and technological matters relating to the Convention. This body shall be open to participation by all Parties and shall be multidisciplinary. It shall comprise government representatives competent in the relevant field of expertise. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the guidance of the Conference of the Parties, and drawing upon existing competent international bodies, this body shall:

(a) Provide assessments of the state of scientific knowledge relating to climate change and its effects;

(b) Prepare scientific assessments on the effects of measures taken in the implementation of the Convention;

(c) Identify innovative, efficient and state-of-the-art technologies and know-how and advise on the ways and means of promoting development and/or transferring such technologies;

(d) Provide advice on scientific programmes, international cooperation in research and development related to climate change, as well as on ways and means of supporting endogenous capacity-building in developing countries; and

(e) Respond to scientific, technological and methodological questions that the Conference of the Parties and its subsidiary bodies may put to the body.

3. The functions and terms of reference of this body may be further elaborated by the Conference of the Parties.

Article 10. Subsidiary Body for Implementation

1. A subsidiary body for implementation is hereby established to assist the Conference of the Parties in the assessment and review of the effective implementation of the Convention. This body shall be open to participation by all Parties and comprise government representatives who are experts on matters related to climate change. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the guidance of the Conference of the Parties, this body shall:

(a) Consider the information communicated in accordance with Article 12, paragraph 1, to assess the overall aggregated effect of the steps taken by the Parties in the light of the latest scientific assessments concerning climate change;

(b) Consider the information communicated in accordance with Article 12, paragraph 2, in order to assist the Conference of the Parties in carrying out the reviews required by Article 4, paragraph 2(d); and

(c) Assist the Conference of the Parties, as appropriate, in the preparation and implementation of its decisions.

Article 11. Financial Mechanism

1. A mechanism for the provision of financial resources on a grant or concessional basis, including for the transfer of technology, is hereby defined. It shall function under the guidance of and be accountable to the Conference of the Parties, which shall decide on its policies, programme priorities and eligibility criteria related to this Convention. Its operation shall be entrusted to one or more existing international entities.

2. The financial mechanism shall have an equitable and balanced representation of all Parties within a transparent system of governance.

3. The Conference of the Parties and the entity or entities entrusted with the operation of the financial mechanism shall agree upon arrangements to give effect to the above paragraphs, which shall include the following:

(a) Modalities to ensure that the funded projects to address climate change are in conformity with the policies, programme priorities and eligibility criteria established by the Conference of the Parties;

(b) Modalities by which a particular funding decision may be reconsidered in light of these policies, programme priorities and eligibility criteria;

(c) Provision by the entity or entities of regular reports to the Conference of the Parties on its funding operations, which is consistent with the requirement for accountability set out in paragraph 1 above; and

(d) Determination in a predictable and identifiable manner of the amount of funding necessary and available for the implementation of this Convention and the conditions under which that amount shall be periodically reviewed.

4. The Conference of the Parties shall make arrangements to implement the above mentioned provisions at its first session, reviewing and taking into account the interim arrangements referred to in Article 21, paragraph 3, and shall decide whether these interim arrangements shall be maintained. Within four years thereafter, the Conference of the Parties shall review the financial mechanism and take appropriate measures.

5. The developed country Parties may also provide and developing country Parties avail themselves of, financial resources related to the implementation of the Convention through bilateral, regional and other multilateral channels.

Article 12. Communication of Information Related to Implementation

1. In accordance with Article 4, paragraph 1, each Party shall communicate to the Conference of the Parties, through the secretariat, the following elements of information:

(a) A national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, to the extent its capacities permit, using comparable methodologies to be promoted and agreed upon by the Conference of the Parties;

(b) A general description of steps taken or envisaged by the Party to implement the Convention; and

(c) Any other information that the Party considers relevant to the achievement of the objective of the Convention and suitable for inclusion in its communication, including, if feasible, material relevant for calculations of global emission trends.

2. Each developed country Party and each other Party included in annex I shall incorporate in its communication the following elements of information:

(a) A detailed description of the policies and measures that it has adopted to implement its commitment under Article 4, paragraphs 2(a) and 2(b); and

(b) A specific estimate of the effects that the policies and measures referred to in subparagraph (a) immediately above will have on anthropogenic emissions by its sources and removals by its sinks of greenhouse gases during the period referred to in Article 4, paragraph 2(a).

3. In addition, each developed country Party and each other developed Party included in annex II shall incorporate details of measures taken in accordance with Article 4, paragraphs 3, 4 and 5.

4. Developing country Parties may, on a voluntary basis, propose projects for financing, including specific technologies, materials, equipment, techniques or practices that would be needed to implement such projects, along with, if possible, an estimate of all incremental costs, of the reductions of emissions and increments of removals of greenhouse gases, as well as an estimate of the consequent benefits.

5. Each developed country Party and each other Party included in annex I shall make its initial communication within six months of the entry into force of the Convention for that Party. Each Party not so listed shall make its initial communication within three years of the entry into force of the Convention for that Party, or of the availability of financial resources in accordance with Article 4, paragraph 3. Parties that are least developed countries may make their initial communication at their discretion. The frequency of subsequent communications by all Parties shall be determined by the Conference of the Parties, taking into account the differentiated timetable set by this paragraph.

6. Information communicated by Parties under this Article shall be transmitted by the secretariat as soon as possible to the Conference of the Parties and to any subsidiary bodies concerned. If necessary, the procedures for the communication of information may be further considered by the Conference of the Parties.

7. From its first session, the Conference of the Parties shall arrange for the provision to developing country Parties of technical and financial support, on request, in compiling and communicating information under this Article, as well as in identifying the technical and financial needs associated with proposed projects and response measures under Article 4. Such support may be provided by other Parties, by competent international organizations and by the secretariat, as appropriate.

8. Any group of Parties may, subject to guidelines adopted by the Conference of the Parties, and to prior notification to the Conference of the Parties, make a joint communication in fulfilment of their obligations under this Article, provided that such a communication includes information on the fulfilment by each of these Parties of its individual obligations under the Convention.

9. Information received by the secretariat that is designated by a Party as confidential, in accordance with criteria to be established by the Conference of the Parties, shall be aggregated by the secretariat to protect its confidentiality before being made available to any of the bodies involved in the communication and review of information.

10. Subject to paragraph 9 above, and without prejudice to the ability of any Party to make public its communication at any time, the secretariat shall make communications by Parties under this Article publicly available at the time they are submitted to the Conference of the Parties.

Article 13. Resolution of Questions Regarding Implementation

The Conference of the Parties shall, at its first session, consider the establishment of a multilateral consultative process, available to Parties on their request, for the resolution of questions regarding the implementation of the Convention.

Article 14. Settlement of Disputes

1. In the event of a dispute between any two or more Parties concerning the interpretation or application of the Convention, the Parties concerned shall seek a settlement of the dispute through negotiation or any other peaceful means of their own choice.

2. When ratifying, accepting, approving or acceding to the Convention, or at any time thereafter, a Party which is not a regional economic integration organization may declare in a written instrument submitted to the Depositary that, in respect of any dispute concerning the interpretation or application of the Convention, it recognizes as compulsory *ipso facto* and without special agreement, in relation to any Party accepting the same obligation:

(a) Submission of the dispute to the International Court of Justice, and/or

(b) Arbitration in accordance with procedures to be adopted by the Conference of the Parties as soon as practicable, in an annex on arbitration.

A Party which is a regional economic integration organization may make a declaration with like effect in relation to arbitration in accordance with the procedures referred to in subparagraph (b) above.

3. A declaration made under paragraph 2 above shall remain in force until it expires in accordance with its terms or until three months after written notice of its revocation has been deposited with the Depositary.

4. A new declaration, a notice of revocation or the expiry of a declaration shall not in any way affect proceedings pending before the International Court of Justice or the arbitral tribunal, unless the parties to the dispute otherwise agree.

5. Subject to the operation of paragraph 2 above, if after twelve months following notification by one Party to another that a dispute exists between them, the Parties concerned have not been able to settle their dispute through the means mentioned in paragraph 1 above, the dispute shall be submitted, at the request of any of the parties to the dispute, to conciliation.

6. A conciliation commission shall be created upon the request of one of the parties to the dispute. The commission shall be composed of an equal number of members appointed by each party concerned and a chairman chosen jointly by the members appointed by each party. The commission shall render a recommendatory award, which the parties shall consider in good faith.

7. Additional procedures relating to conciliation shall be adopted by the Conference of the Parties, as soon as practicable, in an annex on conciliation.

8. The provisions of this Article shall apply to any related legal instrument which the Conference of the Parties may adopt, unless the instrument provides otherwise.

Article 15. Amendments to the Convention

1. Any Party may propose amendments to the Convention.

2. Amendments to the Convention shall be adopted at an ordinary session of the Conference of the Parties. The text of any proposed amendment to the Convention shall be communicated to the Parties by the secretariat at least six months before the meeting at which it is proposed for adoption. The secretariat shall also communicate proposed amendments to the signatories to the Convention and, for information, to the Depositary.

3. The Parties shall make every effort to reach agreement on any proposed amendment to the Convention by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting at the meeting. The adopted amendment shall be communicated by the secretariat to the Depositary, who shall circulate it to all Parties for their acceptance.

4. Instruments of acceptance in respect of an amendment shall be deposited with the Depositary. An amendment adopted in accordance with paragraph 3 above shall enter into force for those Parties having accepted it on the ninetieth day after the date of receipt by the Depositary of an instrument of acceptance by at least three-fourths of the Parties to the Convention.

5. The amendment shall enter into force for any other Party on the ninetieth day after the date on which that Party deposits with the Depositary its instrument of acceptance of the said amendment.

6. For the purposes of this Article, "Parties present and voting" means Parties present and casting an affirmative or negative vote.

Article 16. Adoption and Amendment of Annexes to the Convention

1. Annexes to the Convention shall form an integral part thereof and, unless otherwise expressly provided, a reference to the Convention constitutes at the same time a reference to any annexes thereto. Without prejudice to the provisions of Article 14, paragraphs 2(b) and 7, such annexes shall be restricted to lists, forms and any other material of a descriptive nature that is of a scientific, technical, procedural or administrative character.

2. Annexes to the Convention shall be proposed and adopted in accordance with the procedure set forth in Article 15, paragraphs 2, 3, and 4.

3. An annex that has been adopted in accordance with paragraph 2 above shall enter into force for all Parties to the Convention six months after the date of the communication by the Depositary to such Parties of the adoption of the annex, except for those Parties that have notified the Depositary, in writing, within that period of their non-acceptance of the annex. The annex shall enter into force for Parties which withdraw their notification of non-acceptance on the ninetieth day after the date on which withdrawal of such notification has been received by the Depositary.

4. The proposal, adoption and entry into force of amendments to annexes to the Convention shall be subject to the same procedure as that for the proposal, adoption and entry into force of annexes to the Convention in accordance with paragraphs 2 and 3 above.

5. If the adoption of an annex or an amendment to an annex involves an amendment to the Convention, that annex or amendment to an annex shall not enter into force until such time as the amendment to the Convention enters into force.

Article 17. Protocols

1. The Conference of the Parties may, at any ordinary session, adopt protocols to the Convention.

2. The text of any proposed protocol shall be communicated to the Parties by the secretariat at least six months before such a session.

3. The requirements for the entry into force of any protocol shall be established by that instrument.

4. Only Parties to the Convention may be Parties to a protocol.

5. Decisions under any protocol shall be taken only by the Parties to the protocol concerned.

Article 18. Right to Vote

1. Each Party to the Convention shall have one vote, except as provided for in paragraph 2 below.

2. Regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States that are Parties to the Convention. Such an organization shall not exercise its right to vote if any of its member States exercises its right, and vice versa.

Article 19. Depositary

The Secretary-General of the United Nations shall be the Depositary of the Convention and of protocols adopted in accordance with Article 17.

Article 20. Signature

This Convention shall be open for signature by States Members of the United Nations or of any of its specialized agencies or that are Parties to the Statute of the International Court of Justice and by regional economic integration organizations at Rio de Janeiro, during the United Nations Conference on Environment and Development, and thereafter at United Nations Headquarters in New York from 20 June 1992 to 19 June 1993.

Article 21. Interim Arrangements

1. The secretariat functions referred to in Article 8 will be carried out on an interim basis by the secretariat established by the General Assembly of the United Nations in its resolution 45/212 of 21 December 1990, until the completion of the first session of the Conference of the Parties.

2. The head of the interim secretariat referred to in paragraph 1 above will cooperate closely with the Intergovernmental Panel on Climate Change to ensure that the Panel can respond to the need for objective scientific and technical advice. Other relevant scientific bodies could also be consulted.

3. The Global Environment Facility of the United Nations Development Programme, the United Nations Environment Programme and the International Bank for Reconstruction and Development shall be the international entity entrusted with the operation of the financial mechanism referred to in Article 11 on an interim basis. In this connection, the Global Environment Facility should be appropriately restructured and its membership made universal to enable it to fulfil the requirements of Article 11.

Article 22. Ratification, Acceptance, Approval or Accession

1. The Convention shall be subject to ratification, acceptance, approval or accession by States and by regional economic integration organizations. It shall be open for accession from the day after the date on which the Convention is closed for signature. Instruments of ratification, acceptance, approval or accession shall be deposited with the Depositary.

2. Any regional economic integration organization which becomes a Party to the Convention without any of its member States being a Party shall be bound by all the obligations under the Convention. In the case of such organizations, one or more of whose member States is a Party to the Convention, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under the Convention. In such cases, the organization and the member States shall not be entitled to exercise rights under the Convention concurrently.

3. In their instruments of ratification, acceptance, approval or accession, regional economic integration organizations shall declare the extent of their competence with respect to the matters governed by the Convention. These organizations shall also inform the Depositary, who shall in turn inform the Parties, of any substantial modification in the extent of their competence.

Article 23. Entry into Force

1. The Convention shall enter into force on the ninetieth day after the date of deposit of the fiftieth instrument of ratification, acceptance, approval or accession.

2. For each State or regional economic integration organization that ratifies, accepts or approves the Convention or accedes thereto after the deposit of the fiftieth instrument of ratification, acceptance, approval or accession, the Convention shall enter into force on the ninetieth day after the date of deposit by such State or regional economic integration organization of its instrument of ratification, acceptance, approval or accession.

3. For the purposes of paragraphs 1 and 2 above, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by States members of the organization.

Article 24. Reservations

No reservations may be made to the Convention.

Article 25. Withdrawal

1. At any time after three years from the date on which the Convention has entered into force for a Party, that Party may withdraw from the Convention by giving written notification to the Depositary.

2. Any such withdrawal shall take effect upon expiry of one year from the date of receipt by the Depositary of the notification of withdrawal, or on such later date as may be specified in the notification of withdrawal.

3. Any Party that withdraws from the Convention shall be considered as also having withdrawn from any protocol to which it is a Party.

Article 26. Authentic Texts

The original of this Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

IN WITNESS WHEREOF the undersigned, being duly authorized to that effect, have signed this Convention.

DONE at New York this ninth day of May one thousand nine hundred and ninety-two.

Australia
Austria
Belarus[a/]
Belgium
Bulgaria[a/]
Canada
Czechoslovakia[a/]
Denmark
European Community
Estonia[a/]
Finland
France
Germany
Greece
Hungary[a/]
Iceland
Ireland
Italy
Japan
Latvia[a/]
Lithuania[a/]
Luxembourg
Netherlands
New Zealand
Norway
Poland[a/]
Portugal
Romania[a/]
Russian Federation[a/]
Spain
Sweden
Switzerland
Turkey
Ukraine[a/]
United Kingdom of Great
Britain and Northern Ireland
United States of America

[a/] Countries that are undergoing the process of transition to a market economy.

ANNEX II

Australia
Austria
Belgium
Canada
Denmark
European Community
Finland
France
Germany
Greece
Iceland
Ireland
Italy
Japan
Luxembourg
Netherlands
New Zealand
Norway
Portugal
Spain
Sweden
Switzerland
Turkey
United Kingdom of Great
Britain and Northern Ireland
United States of America

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